MARVELS OF SCIENCE

A COMIC FOR YOUNGSTERS AND ADULTS

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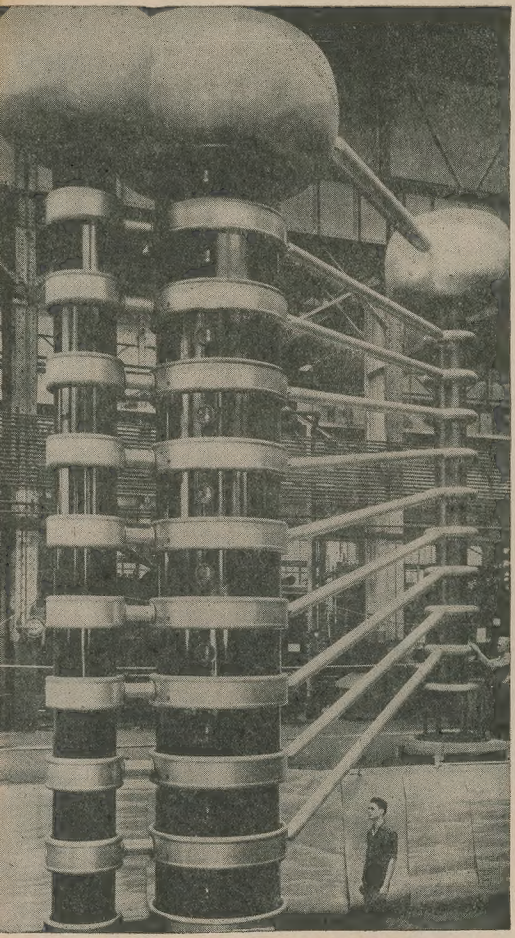

X-RAY MACHINE WITH GAMMA RAY OUTPUT EQUAL TO $150,000,000 WORTH OF RADIUM

MARVELS of SCIENCE

A Letter from the Publisher

This, the first issue of a new idea in the comic publishing field, is an attempt to entertainingly bring the world of science to people who are not scientists. Atomic energy, radar, penicillin and scores of other marvels have made every living being science-conscious but not all of us are science-understanding. To remedy that situation, MARVELS OF SCIENCE was created and the comic format was deliberately selected as the simplest way to present its subjects.

It has been an Herculean task to make the original selections, to prepare the scripts for young people (and adults), to keep the drawings accurate and above all to maintain the goal of scientific authenticity. Each story and picture in MARVELS OF SCIENCE has been checked and rechecked by our research department. Yet it is possible, even probable, that errors have crept in. We invite you to tell us about them and we promise to be even more careful in the future. We plan a new issue of MARVELS OF SCIENCE each month and will reprint any interesting letters we receive. MARVELS OF SCIENCE was born to serve you and we'll add departments or kill any subjects that you advise us you want or don't care for, as the case may be. Our assistant editor is a science teacher and a regular fellow—he's waiting to hear from you.

Ted Charlton
PUBLISHER

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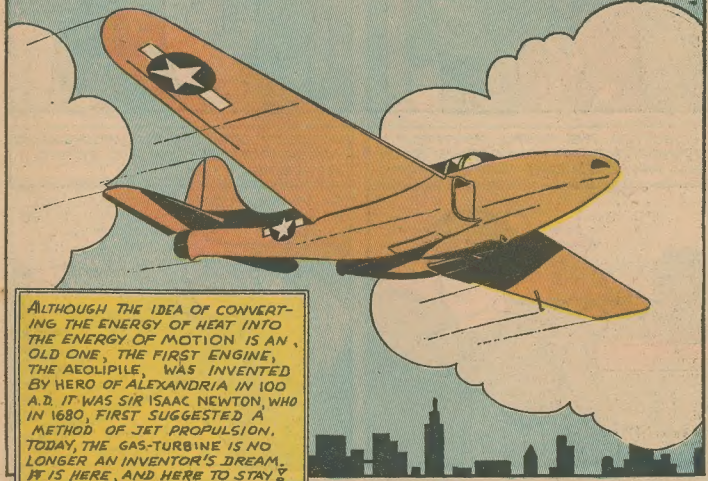
JET PLANE

THE AIRCRAFT OF THE FUTURE



ALTHOUGH THE IDEA OF CONVERTING THE ENERGY OF HEAT INTO THE ENERGY OF MOTION IS AN OLD ONE, THE FIRST ENGINE, THE AEOLIPILE, WAS INVENTED BY HERO OF ALEXANDRIA IN 100 A.D. IT WAS SIR ISAAC NEWTON, WHO IN 1680, FIRST SUGGESTED A METHOD OF JET PROPULSION. TODAY, THE GAS-TURBINE IS NO LONGER AN INVENTOR'S DREAM. IT IS HERE, AND HERE TO STAY!

BASED ON SIR ISAAC NEWTON'S PRINCIPLES OF HIS 3rd LAW OF MOTION A STEAM JET PROPELS A TINY BOAT--

-BUT, NOT UNTIL QUITE RECENTLY HAS NEWTON'S PRINCIPLE BEEN PUT TO PRACTICAL USES. FRANK WHITTLE, SON OF AN ENGLISH INVENTOR, SPENT EVERY SPARE MINUTE BUILDING MODEL PLANES---

STOP YOUR TINKERING, FRANK, AND COME TO THE TABLE!

RIGHT AWAY, FATHER.

IN 1930 YOUNG FRANK WHITTLE PATENTED HIS PLANS FOR A PROPELLERLESS AIRCRAFT - -

NOW THAT YOU HAVE YOUR PATENT, WHAT ARE YOU GOING TO DO, FRANK?

TRY TO INTEREST SOME MANUFACTURER IN MY JET-PLANE.

BUT FRANK'S EXTREME YOUTH, HE WAS ONLY 22 AT THE TIME, PROVED AN OBSTACLE HE WAS UNABLE TO OVERCOME -

WELL, ANY LUCK, FRANK?

NO, HE'S JUST AS SHORTSIGHTED AS THE OTHERS!

ALLISON AIRCRAFT

DISGUSTED, THE YOUNG INVENTOR JOINED THE R.A.F., WHERE HE SOON WAS PROMOTED TO GROUP CAPTAIN--

IN 1933 FRANK WHITTLE INTERRUPTED HIS MILITARY CAREER AND JOINED CAMBRIDGE - - -

OF COURSE IT CAN BE DONE, BUT--

GOOD, WE WILL HELP YOU. I'LL BE ABLE TO FINANCE YOU FOR A WHILE!

WHITTLE-TURBINE

THIS GROUP OF ENTHUSIASTIC YOUNG MEN STARTED TO BUILD THE FIRST GAS-TURBINE IN A VACANT FOUNDRY NEAR GLOUCESTER - - -

AFTER SEVERAL YEARS OF HARD WORK, WHITTLE'S ENGINE PASSED ITS INITIAL BENCH-TEST WITH FLYING COLORS!

SHORTLY THEREAFTER THE GOVERNMENT PUT FRANK ON SPECIAL DUTY FOR FURTHER RESEARCH---

YOU CAN CONTINUE YOUR GOOD WORK AT OUR LABORATORIES AND YOU'LL HAVE A FREE HAND!

BY 1941 THE FIRST JET-PROPELLED BRITISH PLANE WAS READY FOR TESTING--

GUARD IT WELL OFFICER, WE'LL CALL FOR IT IN THE MORNING.

YOU CAN REST EASY, SIR.

BUT, WHEN THE POLICE INSPECTED THE PLANE AT DAWN---

BLYMIE, THE PROPELLER IS GONE!

THE POLICE SEARCHED THE COUNTRYSIDE FOR MANY HOURS FOR THE MISSING PROPELLER, UNTIL THEY WERE TOLD THE NEW PLANE HAD NONE! -TO KEEP THE SECRET, THE PLANE WAS PULLED INTO AN AIRPORT WITH A FALSE NOSE AND PROPELLER--

WHILE THE ENGINE WAS BEING READIED FOR THE TEST FLIGHT, A PILOT STEPPED TOO CLOSE TO THE AIR-INTAKE, AND--

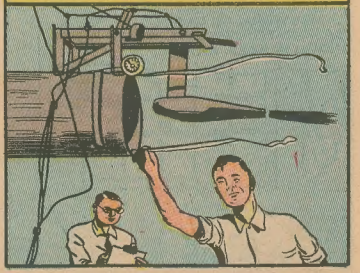
WHAT THE-!

SHUT THE ENGINE OFF!

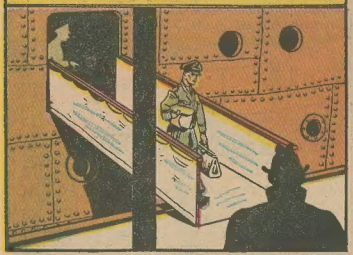
STILL ANOTHER MISHAP MARRED THE DAY, WHEN AN OFFICIAL CROSSED THE PATH OF THE PLANE'S EXHAUST---

SOON AFTER THE SUCCESSFUL FLIGHT OF WHITTLE'S JET-PLANE A NUMBER OF ODD-SHAPED PACKAGES ARRIVED AT LYNN, MASS. - -

WHILE THESE PARCELS, WHICH CONTAINED PARTS OF WHITTLE'S ENGINE, KEPT ON COMING, ENGINEERS AT THE G.E. Co. WERE BUSY EXPERIMENTING - - -



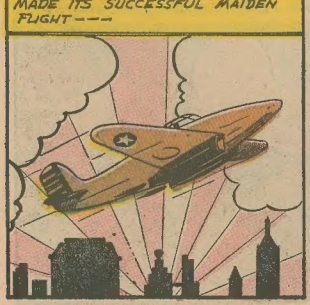
LATER, CAPT. FRANK WHITTLE ARRIVED IN THE UNITED STATES UNDER THE NAME OF WHITTLEY TO ASSIST IN THE DESIGN AND CONSTRUCTION OF THE AMERICAN JET-PLANE - - -



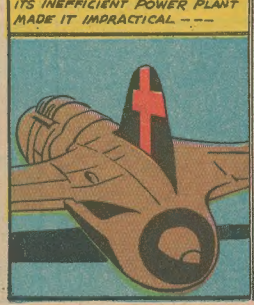
WHILE THE MOTOR WAS BEING ASSEMBLED, THE BELL AIRCRAFT CO. BUILT A SPECIAL P-59 TO HOUSE THE ENGINE - - -

HELLO PAT! WHAT YAH WATCHING?
I DON'T KNOW. MUST BE SOMETHING BIG THE WAY THEY'RE ACTING.
BELL AIRCRAFT.
POSITIVELY NO ADMITTANCE!

AND IN OCTOBER 1942 THE FIRST AMERICAN-BUILT TWIN-JET PLANE MADE ITS SUCCESSFUL MAIDEN FLIGHT - - -

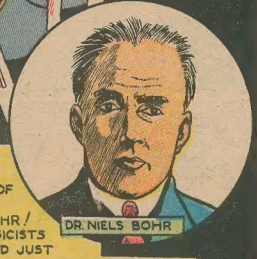


ALTHOUGH THE FIRST JET-PLANE WAS THE ITALIAN CAPRONI-CAMPINI ITS INEFFICIENT POWER PLANT MADE IT IMPRACTICAL - - -



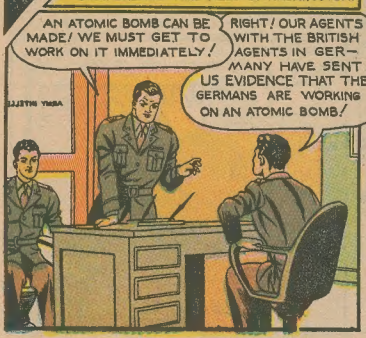
THE GAS-TURBINE WORKS ON ALMOST ANY KIND OF OIL FUEL. JET-PLANES HAVE NO VIBRATION, ALLOW LIGHT CONSTUCTION, ARE NOISELESS AND ATTAIN FULL POWER 30 SECONDS AFTER STARTING. JET-PLANES REACH A MAXIMUM SPEED OF 700 M.P.H. THEY ARE NOT ROCKETS, BECAUSE ROCKETS MUST CARRY THEIR OWN OXIGEN SUPPLY.

HERO SCIENTIST of the ATOM BOMB



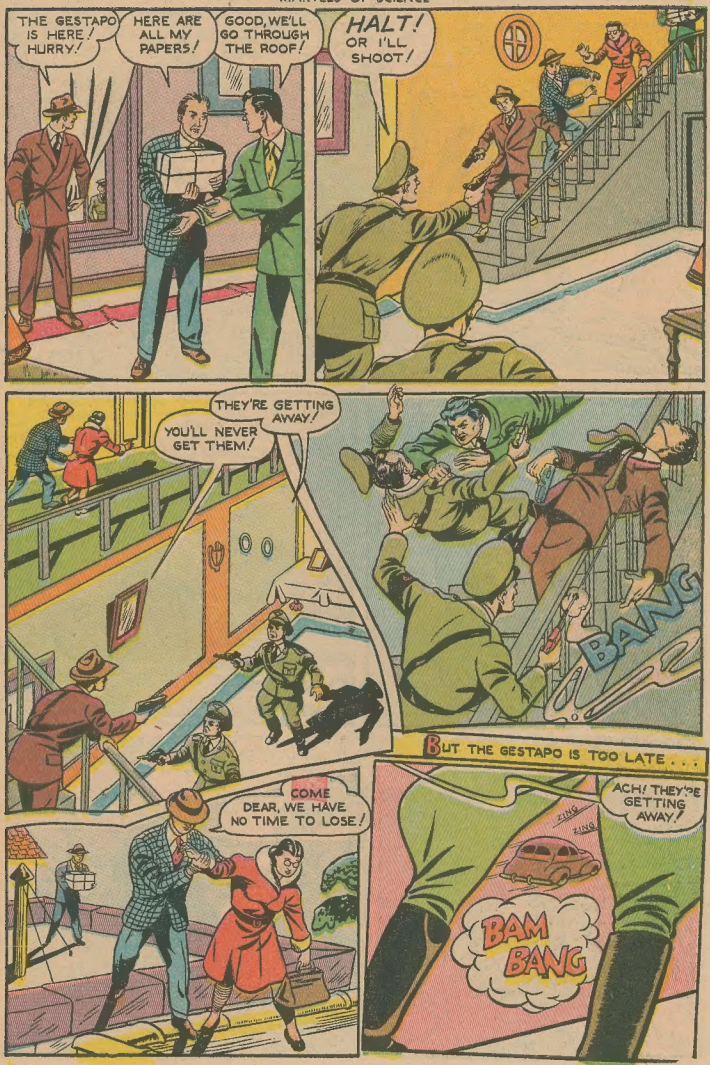
TRUE AND THRILLING WERE THE RECENT ADVENTURES OF ONE OF THE GREAT HEROS OF SCIENCE, DR. NIELS BOHR / ONE OF THE GREATEST PHYSICISTS IN THE WORLD, HE DESCRIBED JUST HOW THE ELECTRONS WHIRL IN REGULAR ORBITS AROUND THE NUCLEUS OF THE ATOM AND HOW ENERGY IS RELEASED FROM THE SMASHING OF THE ATOM! IN ORDER TO LEAD YOU INTO THE EXCITING PRESENT, WE TAKE YOU TO . . . .

IN THE MIDDLE OF 1940, A SECRET CONFERENCE WAS HELD IN WASHINGTON!


AN ATOMIC BOMB CAN BE MADE! WE MUST GET TO WORK ON IT IMMEDIATELY!
RIGHT! OUR AGENTS WITH THE BRITISH AGENTS IN GERMANY HAVE SENT US EVIDENCE THAT THE GERMANS ARE WORKING ON AN ATOMIC BOMB!

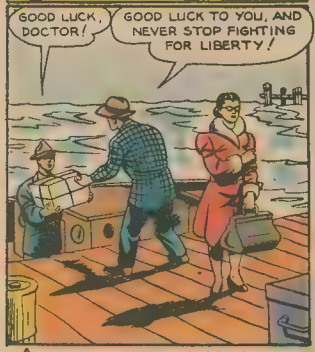
INSIDE GERMANY . . . .

IN HITLER'S OFFICE....
VE HAFF PROMISED THIS DR. BOHR RICHES UND SECURITY BUT HE VILL NOT AID US BECAUSE YOU HAFF PERSECUTED DER JEWS UND HE IS A JEW!
DER SWINE! ARREST HIM UND CONFISCATE ALL OF HIS PAPERS! VE MUST HAFF HIS LABORATORY PAPERS!
THE DANISH UNDERGROUND HEARS OF THIS..
WE MUST GET DR. BOHR AND HIS WIFE AND ALL OF HIS RESEARCH PAPERS OUT OF THE COUNTRY!
YES, WE'LL SMUGGLE THEM TO SWEDEN!
WE'LL ENTER HIS HOUSE FROM THE ROOF!
YES, HURRY! WE HAVE NO TIME TO LOSE!
DR. WE HAVE COME TO TAKE YOU AND YOUR WIFE AND RESEARCH PAPERS OUT OF THE COUNTRY!
BUT HOW? THE HOUSE IS GUARDED DAY AND NIGHT!
JUST THEN — OUTSIDE THE HOUSE....
YOUR PAPERS, SIR?
HERE — VE HAF COME TO ARREST DER JEW, BOHR!


THE GESTAPO IS HERE! HURRY!
HERE ARE ALL MY PAPERS!
GOOD, WE'LL GO THROUGH THE ROOF!
HALT! OR I'LL SHOOT!
THEY'RE GETTING AWAY!
YOU'LL NEVER GET THEM!
BANG
BUT THE GESTAPO IS TOO LATE . . .
COME DEAR, WE HAVE NO TIME TO LOSE!
ACH! THEY'RE GETTING AWAY!
RING
RING
BAM
BANG

HITLER HEARS OF THEIR ESCAPE....
DUMBKOPFS! YOU HAFF LET THEM ESCAPE! CAPTURE THEM OR I'LL HANG YOU ALL!
THE GESTAPO WILL BE HOT ON OUR TRAIL! WE MAY NOT SUCCEED DR. BOHR!
IT IS BETTER TO DIE THAN SERVE THE NAZIS!
SUDDENLY — THE GESTAPO ARRIVES....
THERE THEY GO! STOP THEM!
VE VILL STOP DER SCHVINE! VEN DER FUEHRER CAN'T HAF HIM, NO ONE VILL!
BANG
WE'LL HIDE IN THE SWAMP UNTIL THEY'RE GONE!
THERE THEY GO! NOW WE CAN PROCEED TO SWEDEN!

DR BOHR REACHES SWEDEN....

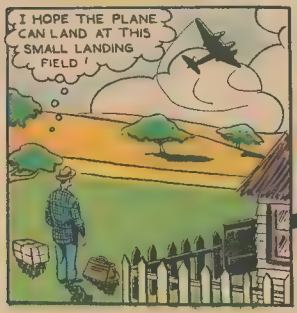


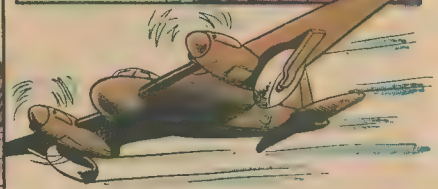
SWEDISH POLICE MEET DR. BOHR....

WE WERE INFORMED OF YOUR ARRIVAL, DR. WE'RE TAKING YOU INTO PROTECTIVE CUSTODY!
THANK YOU, I WOULD NOT LIKE THE NAZI AGENTS TO GET ME HERE!

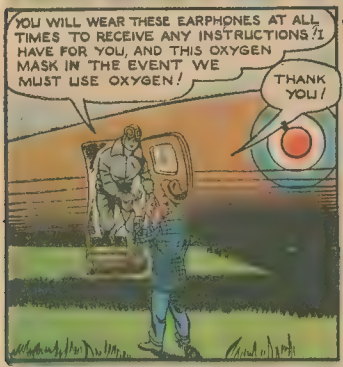
AN HOUR LATER AT THE BRITISH EMBASSY!

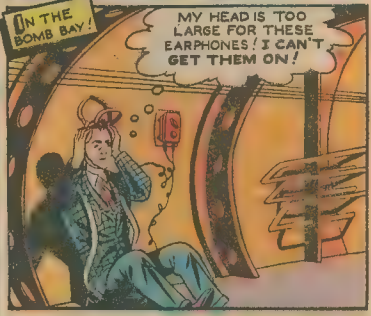
A FEW DAYS LATER AT A BRITISH AIRFIELD....



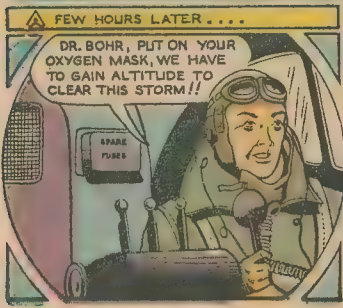


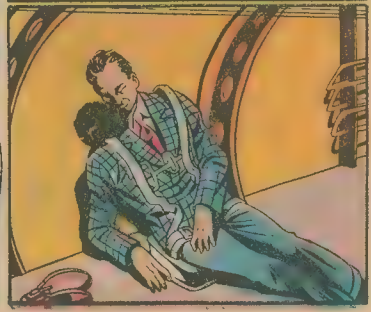
YOU'LL HAVE TO WEAR THIS PARACHUTE AT ALL TIMES! I WAS ORDERED TO DROP YOU THROUGH THE BOMB BAY IN THE EVENT WE'RE ATTACKED BY GERMAN PLANES!
NOW I UNDERSTAND! LET'S GO!


YOU WILL WEAR THESE EARPHONES AT ALL TIMES TO RECEIVE ANY INSTRUCTIONS I HAVE FOR YOU, AND THIS OXYGEN MASK IN THE EVENT WE MUST USE OXYGEN!
THANK YOU!

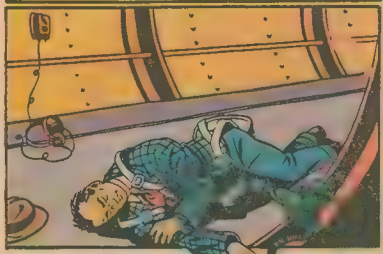


BUT BOHR CANNOT HEAR THE PILOT'S INSTRUCTIONS . . . .

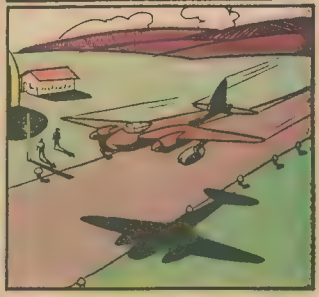




AN HOUR LATER BOHR IS UNCONSCIOUS! HE IS ANOXIC, SUFFERING FROM LACK OF OXYGEN! UNKNOWN TO THE PILOT, BOHR DID NOT RECEIVE HIS INSTRUCTIONS....

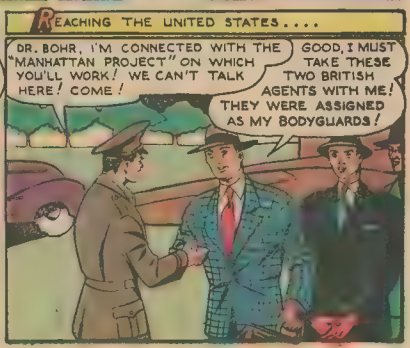


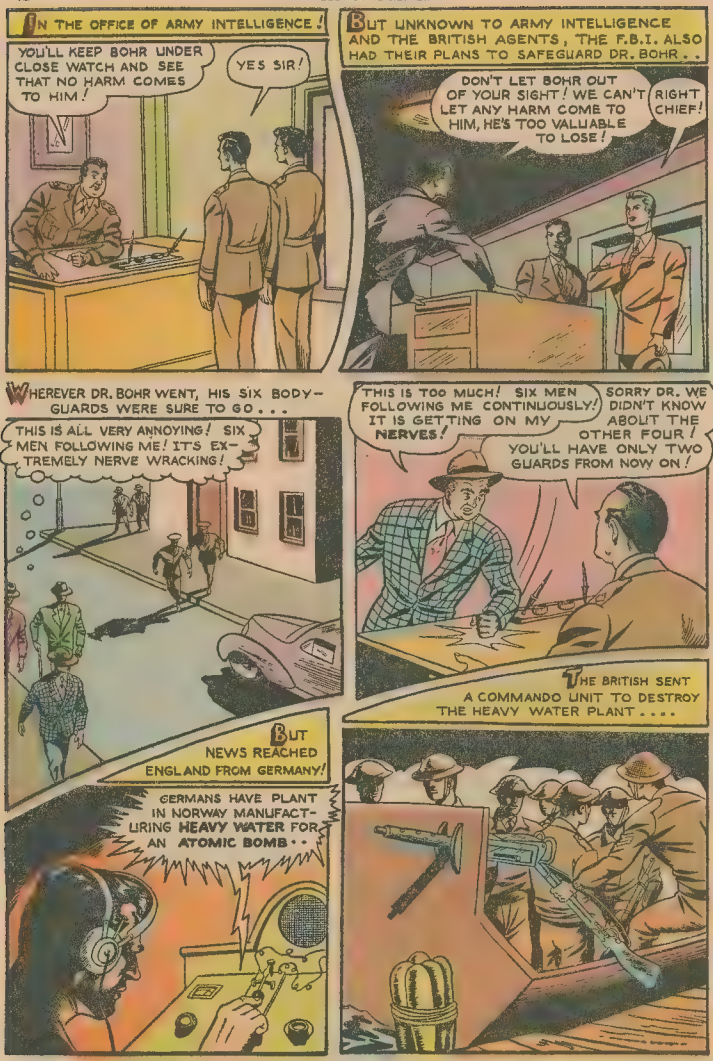
THE PLANE LANDS IN ENGLAND...



HE'S OUT COLD! GET AN AMBULANCE, QUICKLY!
HE ISN'T WEARING HIS EARPHONES! HE DIDN'T HEAR ME WHEN I TOLD HIM TO PUT ON HIS OXYGEN MASK!

REACHING THE UNITED STATES....


DR. BOHR, I'M CONNECTED WITH THE "MANHATTAN PROJECT" ON WHICH YOU'LL WORK! WE CAN'T TALK HERE! COME!
GOOD, I MUST TAKE THESE TWO BRITISH AGENTS WITH ME! THEY WERE ASSIGNED AS MY BODYGUARDS!

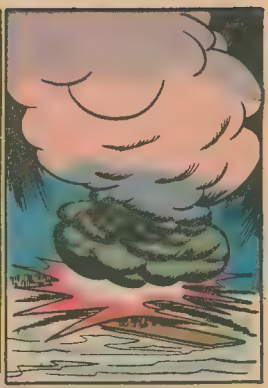

IN THE OFFICE OF ARMY INTELLIGENCE!
YOU'LL KEEP BOHR UNDER CLOSE WATCH AND SEE THAT NO HARM COMES TO HIM!
YES SIR!
BUT UNKNOWN TO ARMY INTELLIGENCE AND THE BRITISH AGENTS, THE F.B.I. ALSO HAD THEIR PLANS TO SAFEGUARD DR. BOHR..
DON'T LET BOHR OUT OF YOUR SIGHT! WE CAN'T LET ANY HARM COME TO HIM, HE'S TOO VALUABLE TO LOSE!
RIGHT CHIEF!
WHEREVER DR. BOHR WENT, HIS SIX BODY-GUARDS WERE SURE TO GO...
THIS IS ALL VERY ANNOYING! SIX MEN FOLLOWING ME! IT'S EXTREMELY NERVE WRACKING!
THIS IS TOO MUCH! SIX MEN FOLLOWING ME CONTINUOUSLY! IT IS GETTING ON MY NERVES!
SORRY DR. WE DIDN'T KNOW ABOUT THE OTHER FOUR! YOU'LL HAVE ONLY TWO GUARDS FROM NOW ON!
THE BRITISH SENT A COMMANDO UNIT TO DESTROY THE HEAVY WATER PLANT....
BUT NEWS REACHED ENGLAND FROM GERMANY!
GERMANS HAVE PLANT IN NORWAY MANUFACTURING HEAVY WATER FOR AN ATOMIC BOMB..

THE NORWEGIAN UNDERGROUND MEETS THE COMMANDO UNIT..
WE CAN DIRECT YOU TO THE HEAVY WATER PLANT!
LET'S GO!
HALT! HALT!
HOLD THEM OFF WHILE I DYNAMITE THE PLANT!
ACH!
YOW!!
THE PLANT EXPLODES FURIOUSLY!..
BOOM
I WON'T FORGET THE UNDERGROUND! WITHOUT THEM THIS WOULD HAVE FAILED!
THE ALLIES HAD SUCCEEDED IN BUILDING THE HUGE PLANTS TO MANUFACTURE THE ATOMIC BOMB IN THE UNITED STATES

A HIGH ARMY OFFICER LECTURES THE WORKERS AT ONE OF THE HUGE ATOMIC BOMB PLANTS!...

I CAN'T TELL YOU WHAT YOU'RE DOING ON THIS JOB! I ASSURE YOU THAT WITH YOUR WORK THE WAR WILL BE WON!

THE TWO BILLION DOLLAR INVESTMENT PAID OFF! JAPAN QUIT! WHAT WOULD HAVE HAPPENED IF GERMANY OR JAPAN SUCCEEDED IN DEVELOPING THE ATOMIC BOMB BEFORE US CAN EASILY BE IMAGINED! OUR CITIES AND HOMES WOULD HAVE BEEN DESTROYED MORE COMPLETELY THAN WAS HIROSHIMA!....



WE WILL NOW HEAR FROM DR. ROBERT R. WILSON OF THE ASSOCIATION OF LOS ALAMOS SCIENTISTS!

THE USE OF ATOMIC ENERGY MUST BE CONTROLLED BY A WORLD AUTHORITY! IT IS CERTAIN THAT NATIONS OTHER THAN THE U.S., GREAT BRITAIN AND CANADA CAN PRODUCE ATOMIC POWER!

DR. ROBT. M. HUTCHINS, CHANCELLOR OF THE UNIVERSITY OF CHICAGO SPEAKS!...

THERE IS NO DEFENSE AGAINST THE ATOMIC BOMB! THERE IS NO METHOD OF DETECTING STOREHOUSES OF ATOMIC BOMBS OR FACTORIES WHICH ARE MANUFACTURING THEM!

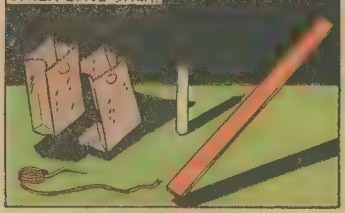
LARRY TIGHE, OF THE AMERICAN BROADCASTING CO. INTERVIEWS PROF. BRUSAKU ARAKATSU, HEAD OF THE NUCLEAR PHYSICS DEPT. OF THE IMPERIAL UNIVERSITY AT KYOTO, JAPAN!....

JAPAN COULD PERFECT AN ATOMIC BOMB IN FIVE TO TEN YEARS! I WAS WELL ON MY WAY WHEN THE AMERICAN MILITARY FORCES CUT OFF THE ELECTRICITY IN MY LABORATORY!

WHAT WILL THE WORLD DO WITH THIS GREAT SOURCE OF ENERGY WHICH IS AT MAN'S DISPOSAL? WILL MAN DEVELOP ATOMIC ENERGY FOR THE BENEFIT OF MANKIND EVERYWHERE, OR WILL HE USE IT FOR MORE TERRIBLE DESTRUCTIVE FORCES THAN THE ATOMIC BOMB??

YOUNG SCIENTIST'S HOME EXPERIMENTS

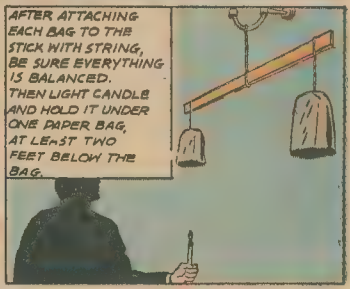
DO YOU KNOW THAT HOT AIR WEIGHS LESS THAN COLD AIR? HERE IS A WAY TO PROVE IT. OBTAIN TWO PAPER BAGS THE SAME SIZE, SOME STRING, A CANDLE, A YARDSTICK OR OTHER LONG STICK.



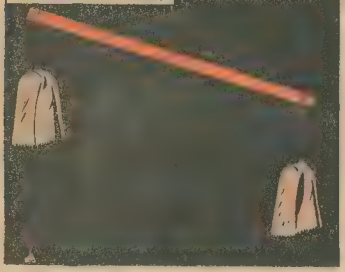
LOOP A PIECE OF STRING AROUND THE MIDDLE OF THE STICK SO AS TO HANG IT UP CONVENIENTLY. FASTEN A PAPER BAG TO EACH END OF THE STICK.

THIS IS HOW THE BAGS ARE FASTENED. PUNCH A SMALL HOLE IN THE BOTTOM OF THE BAG, KNOT THE END OF A PIECE OF STRING AND PUT THE STRING THROUGH THE HOLE. THE KNOT WILL HOLD THE BAG UPSIDE DOWN.

AFTER ATTACHING EACH BAG TO THE STICK WITH STRING, BE SURE EVERYTHING IS BALANCED. THEN LIGHT CANDLE AND HOLD IT UNDER ONE PAPER BAG, AT LEAST TWO FEET BELOW THE BAG.



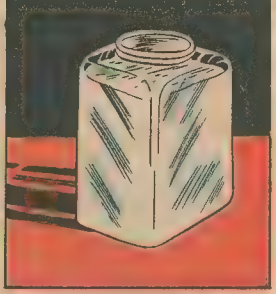
YOU WILL NOTICE THAT AS ONE BAG BECOMES FILLED WITH HOT AIR, IT BECOMES LIGHTER AND MOVES UPWARD.



NOW TAKE THE CANDLE AWAY AND AS THE AIR IN THE BAG COOLS OFF, IT BECOMES HEAVIER AND EVERYTHING IS BALANCED AGAIN.

MAKE A CARTESIAN DIVER AND WATCH IT OBEY YOUR COMMANDS. YOU NEED A LARGE BOTTLE (A ONE QUART BOTTLE WITH FLAT SIDES IS BEST), A SMALL GLASS VIAL, A THIN SHEET OF RUBBER (A PIECE OF BALLOON OR INNER TUBE), AND SOME STRING

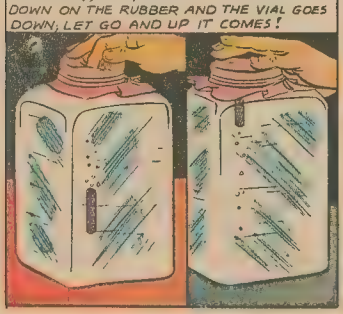
FILL THE LARGE BOTTLE ALMOST FULL OF WATER AND SET IT DOWN IN A LEVEL PLACE.



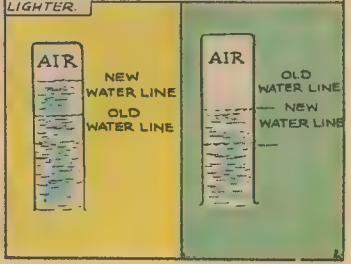
FILL THE VIAL ABOUT HALF FULL OF WATER AND PUT YOUR FINGER OVER THE OPEN END TURN VIAL UPSIDE DOWN, PUT OPEN END UNDER WATER IN LARGE BOTTLE AND LET GO. THE VIAL SHOULD BARELY FLOAT NOTE: YOU MAY HAVE TO TRY SEVERAL TIMES 'TIL YOU HAVE JUST THE CORRECT AMOUNT OF WATER IN THE VIAL TO MAKE IT DO THIS.

NOW FILL THE LARGE BOTTLE TO THE BRIM AND CAREFULLY STRETCH THE PIECE OF RUBBER ACROSS THE TOP, TYING IT WITH THE STRING.

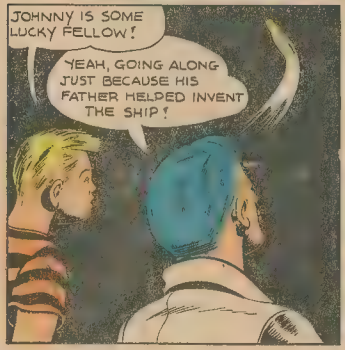
IF YOU HAVE FOLLOWED INSTRUCTIONS CAREFULLY, ALL YOU NEED DO IS PRESS DOWN ON THE RUBBER AND THE VIAL GOES DOWN; LET GO AND UP IT COMES!

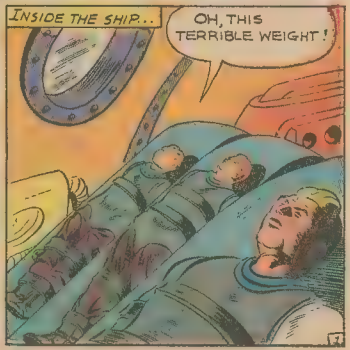


EXPLANATION: PRESSING ON THE RUBBER SQUEEZES SOME WATER INTO THE VIAL, MAKING IT HEAVIER. WHEN YOU LET GO, THE AIR IN THE VIAL PUSHES SOME WATER OUT OF IT, MAKING THE VIAL LIGHTER.

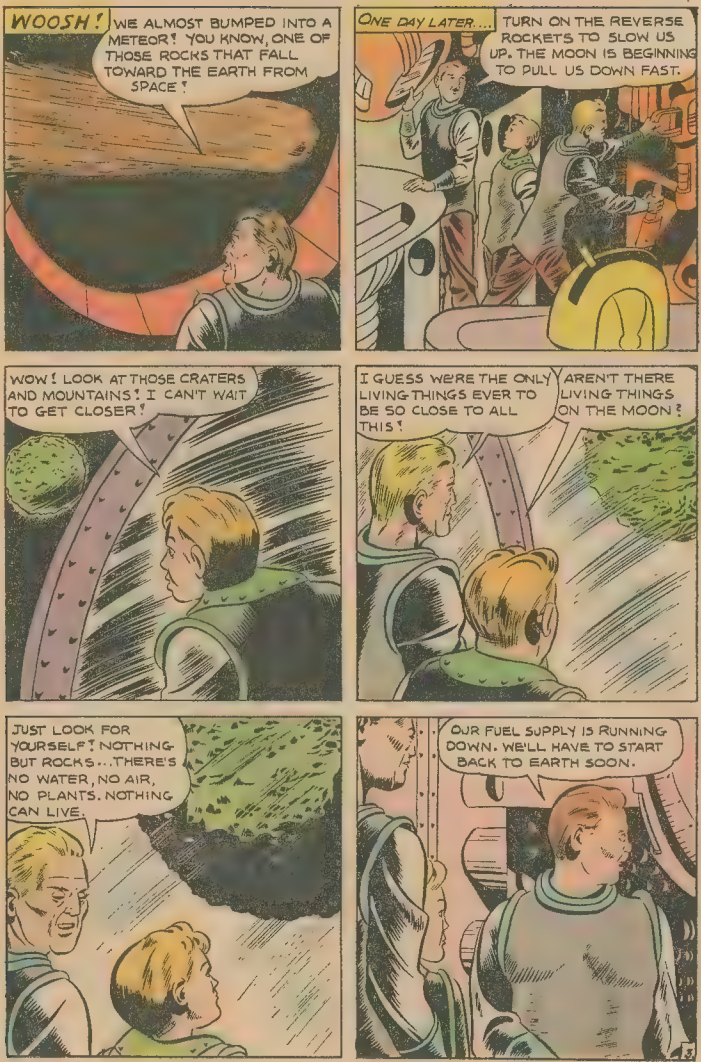


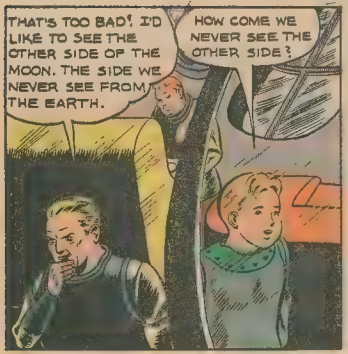
THE FIRST
TRIP to the
Moon
THERE GOES THE FIRST TRIP TO THE MOON!
I WONDER WHAT'S GOING TO HAPPEN!

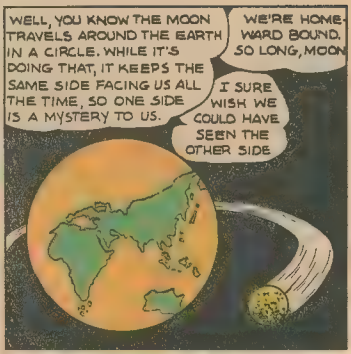

JOHNNY IS SOME LUCKY FELLOW!
YEAH, GOING ALONG JUST BECAUSE HIS FATHER HELPED INVENT THE SHIP!


INSIDE THE SHIP...
OH, THIS TERRIBLE WEIGHT!

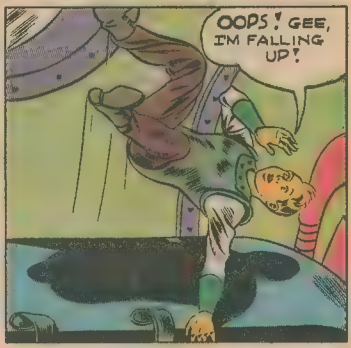
WE'RE GAINING SPEED SO FAST THAT WE FEEL MUCH HEAVIER THAN WE REALLY ARE!
WHAT A SIGHT! SO THAT'S WHAT THE EARTH LOOKS LIKE!
WHY DOES THE EARTH LOOK BLUE?
THAT'S BECAUSE OF THE AIR SURROUNDING IT. THAT PROVES A THEORY THAT SCIENCE HAS BELIEVED TO BE TRUE.
ACCORDING TO MY CALCULATIONS, WE'LL BE AT THE MOON IN ABOUT TWO DAYS. WE'RE OUT ABOUT FOUR HOURS NOW.
AFTER LUNCH
THAT'S THE FIRST TIME I EVER SAW THE SUN AND STARS AT THE SAME TIME!
THERE'S NO AIR OUT HERE TO SPREAD THE SUNLIGHT AND HIDE THE STARS.


WOOSH! WE ALMOST BUMPED INTO A METEOR! YOU KNOW, ONE OF THOSE ROCKS THAT FALL TOWARD THE EARTH FROM SPACE!
ONE DAY LATER.... TURN ON THE REVERSE ROCKETS TO SLOW US UP. THE MOON IS BEGINNING TO PULL US DOWN FAST.
WOW! LOOK AT THOSE CRATERS AND MOUNTAINS! I CAN'T WAIT TO GET CLOSER!
I GUESS WE'RE THE ONLY LIVING THINGS EVER TO BE SO CLOSE TO ALL THIS! AREN'T THERE LIVING THINGS ON THE MOON?
JUST LOOK FOR YOURSELF! NOTHING BUT ROCKS...THERE'S NO WATER, NO AIR, NO PLANTS. NOTHING CAN LIVE.
OUR FUEL SUPPLY IS RUNNING DOWN. WE'LL HAVE TO START BACK TO EARTH SOON.

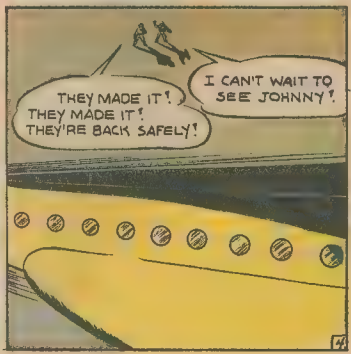

THAT'S TOO BAD! I'D LIKE TO SEE THE OTHER SIDE OF THE MOON. THE SIDE WE NEVER SEE FROM THE EARTH.
HOW COME WE NEVER SEE THE OTHER SIDE?

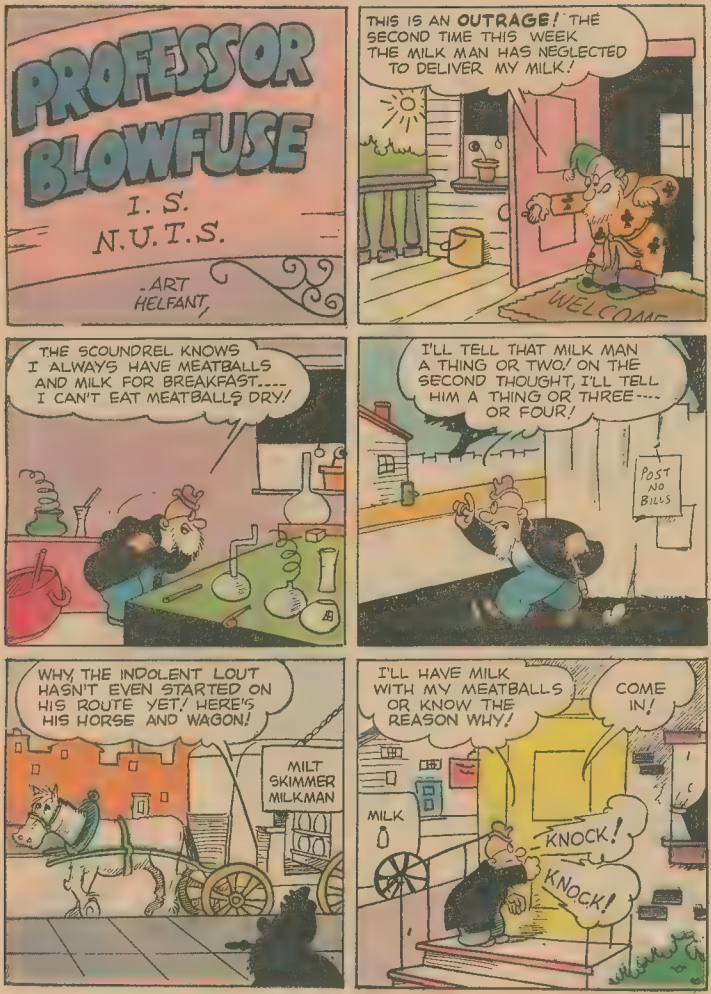

WELL, YOU KNOW THE MOON TRAVELS AROUND THE EARTH IN A CIRCLE. WHILE IT'S DOING THAT, IT KEEPS THE SAME SIDE FACING US ALL THE TIME, SO ONE SIDE IS A MYSTERY TO US.
WE'RE HOMEWARD BOUND. SO LONG, MOON
I SURE WISH WE COULD HAVE SEEN THE OTHER SIDE

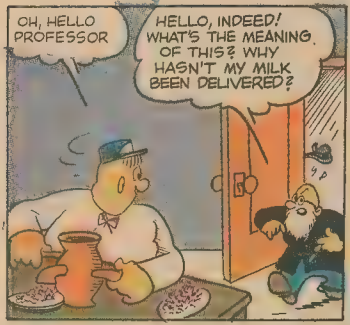
TWO DAYS LATER...
TIE YOURSELVES DOWN. WE'RE GOING TO SLOW DOWN QUICKLY NOW.

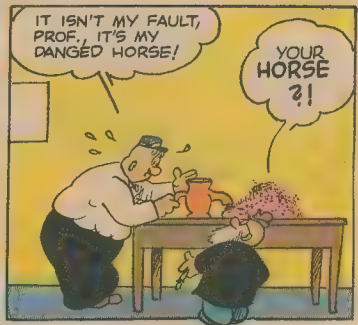

OOPS! GEE, I'M FALLING UP!

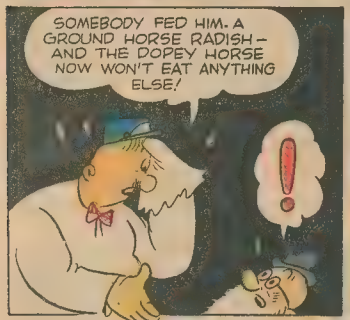
WHEN WE SLOW DOWN QUICKLY, WE LOSE WEIGHT. YOU WERE TOO SLOW TYING YOUR SAFETY BELT. THAT'S WHY YOU FELL UP.

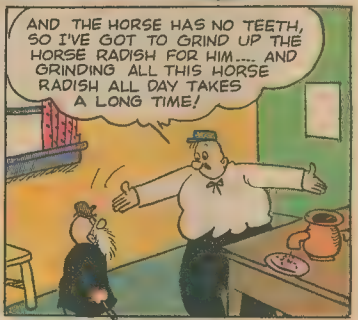

I CAN'T WAIT TO SEE JOHNNY!
THEY MADE IT! THEY MADE IT! THEY'RE BACK SAFELY!

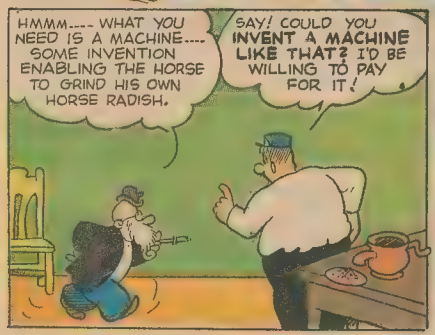

PROFESSOR BLOWFUSE
I. S. N.U.T.S.
-ART HELFANT,
THIS IS AN OUTRAGE! THE SECOND TIME THIS WEEK THE MILK MAN HAS NEGLECTED TO DELIVER MY MILK!
WELCOME
THE SCOUNDREL KNOWS I ALWAYS HAVE MEATBALLS AND MILK FOR BREAKFAST.... I CAN'T EAT MEATBALLS DRY!
I'LL TELL THAT MILK MAN A THING OR TWO! ON THE SECOND THOUGHT, I'LL TELL HIM A THING OR THREE.... OR FOUR!
POST NO BILLS
WHY, THE INDOLENT LOUT HASN'T EVEN STARTED ON HIS ROUTE YET! HERE'S HIS HORSE AND WAGON!
MILT SKIMMER MILKMAN
I'LL HAVE MILK WITH MY MEATBALLS OR KNOW THE REASON WHY!
COME IN!
MILK
KNOCK!
KNOCK!


OH, HELLO PROFESSOR
HELLO, INDEED! WHAT'S THE MEANING OF THIS? WHY HASN'T MY MILK BEEN DELIVERED?

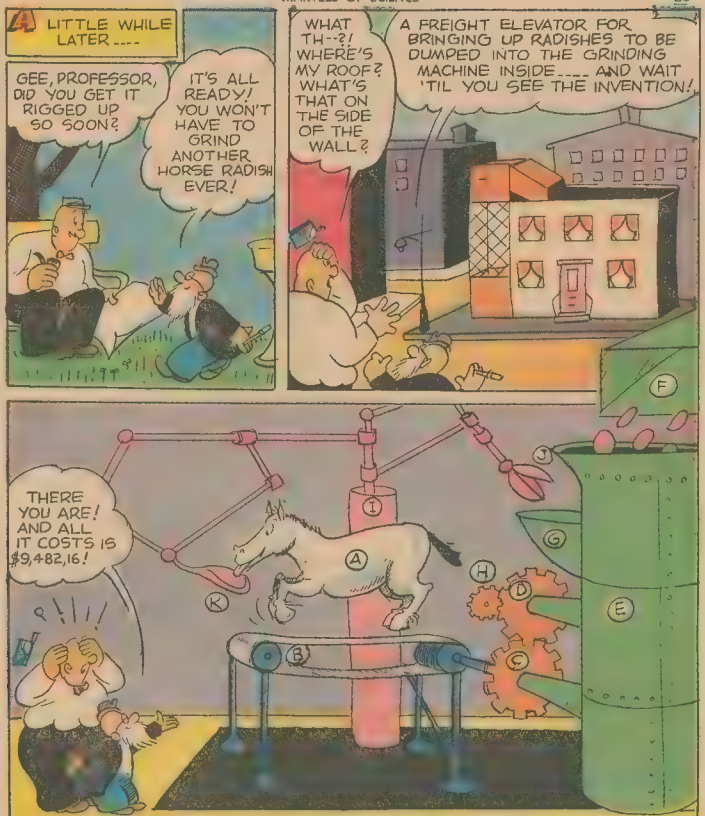

IT ISN'T MY FAULT, PROF., IT'S MY DANGED HORSE!
YOUR HORSE ?!


SOMEBODY FED HIM. A GROUND HORSE RADISH— AND THE DOPEY HORSE NOW WON'T EAT ANYTHING ELSE!
!


AND THE HORSE HAS NO TEETH, SO I'VE GOT TO GRIND UP THE HORSE RADISH FOR HIM.... AND GRINDING ALL THIS HORSE RADISH ALL DAY TAKES A LONG TIME!


HMMM..... WHAT YOU NEED IS A MACHINE.... SOME INVENTION ENABLING THE HORSE TO GRIND HIS OWN HORSE RADISH.
SAY! COULD YOU INVENT A MACHINE LIKE THAT? I'D BE WILLING TO PAY FOR IT!

CERTAINLY! I'LL GO TO WORK ON IT RIGHT AWAY. GO SIT IN THE PARK..... I'LL COME AND GET YOU WHEN IT'S FINISHED.
GEE, THANKS!


4 LITTLE WHILE LATER----
GEE, PROFESSOR, DID YOU GET IT RIGGED UP SO SOON?
IT'S ALL READY! YOU WON'T HAVE TO GRIND ANOTHER HORSE RADISH EVER!
WHAT TH--?! WHERE'S MY ROOF? WHAT'S THAT ON THE SIDE OF THE WALL?
A FREIGHT ELEVATOR FOR BRINGING UP RADISHES TO BE DUMPED INTO THE GRINDING MACHINE INSIDE---- AND WAIT 'TIL YOU SEE THE INVENTION!
THERE YOU ARE! AND ALL IT COSTS IS $9,482,16!
A
B
C
D
E
F
G
H
I
J
K

A ---- HORSE
B ---- TREAD WHICH HORSE REVOLVES WHEN WALKING
C ---- WHICH TURNS GEAR, WHICH TURNS
D ---- ANOTHER GEAR, WHICH WORKS
E ---- GRINDING MACHINE.
F ---- HORSE RADISH SLIDE
G ---- SPOUT TO EMPTY GROUNDS
H ---- GEAR, WHICH WORKS----
I ---- CRANE, WHICH WORKS
J ---- SHOVEL TO PICK GROUND RADISH OUT OF SPOUT AND CARRY IT OVER TO BE DUMPED INTO
K ---- SPOON TO FEED HORSE OUT OF.

ART HELFANT.

"Making" the Weather In Peace and War

Weather forecasting has become so accurate that the layman is prone to feel that weather officers can literally "make" the weather, or order it so far in advance that it is tantamount to manufacturing it. While short-range forecasting is highly accurate, there are limitations on long-range forecasting.

Army verification studies, for example, have shown that 48-hour forecasts are 60 to 90 per cent accurate, while 10-day forecasts are 60 to 75 per cent correct. However, now that Soviet Russia has begun to exchange weather information with the United States about 1,000 times a day, weather forecasting in 1946 should greatly increase in accuracy. This will prove of tremendous value to American air lines, to our shipping, and to our farmers.

American combat success in combined land-sea-air operations can be attributed in a large measure to our world-wide system of scientific weather forecasting and to our strategic use of weather as a military weapon.

No military operation — whether it was a minor sortie by a group of fighters, a bombing mission to Berlin or Tokyo, Naval bombardment of a Pacific island, a ground attack in Germany, or a large-scale invasion—was ever blueprinted unless latest weather information was first consulted. Success of an attack was often dependent upon clear weather, though American armed forces, on the other hand, have profitably exploited bad weather to make offensive strikes against the enemy.

Some examples of weather strategy have already become military classics. The "miraculous" calming of the seas as our landing craft moved near Sicilian shores had been foreseen by military weather experts Plotting of prevailing winds and of the movement of a cold air front over Italy indicated that our invasion ships would have to buck rough waves on the journey from North Africa to Sicily. At the same time the weather specialists promised that the ships would find the waters tranquil in Sicilian harbors. Rough seas en route were both good and bad for the action—hard on the men in the smaller boats but helpful in the safe navigation of some of the large ships over perilous sand bars.

TYPHOON'S TAIL

Near the end of the War, the Navy attacked a certain section of Formosa on the tail of a typhoon. It was reasonable to assume that during the tropical storm the Japanese would secure their installations against the gale, moving planes out of the area and taking all precautions to survive the storm without too much damage By attacking immediately in the wake of the typhoon, the Navy surprised the Japs, leaving them very little time to bring out their planes to attack us in numbers.

At Rabaul, detailed plotting of upper air data made possible the sinking of many Jap ships anchored in the harbor. A smoke screen was to be the main weapon in our attack. The plan was to screen out Jap anti-aircraft nests set up in the hills around the harbor, blotting out their aim on our planes that were to skip bomb the enemy vessels. The operation required stable air so that the smoke would settle in a

thick curtain around and in front of the Jap ack-ack installations. Also required was low wind velocity so that our screen would not suddenly veer and cover the target instead. Conditions were exactly as ordered. The attack was proclaimed highly successful.

Norwegian studies of weather maps during World War I demonstrated that the properties of air were often nearly the same over wide areas covering thousands of miles. These "air masses," stagnated for long intervals of time over a certain region of the earth, absorb uniformly the characteristics of the area. Formations of air masses take place principally in artic and sub-artic regions on one side, and in tropic and sub-tropic regions on the other side. Two main types of air masses are, then, the polar and tropical air masses. These masses, subdivided according to whether the source region is land or water surface, are called "continental" or "maritime". As the air masses move, they come into conflict with one another, and the boundary between the two becomes a "front" or an uneven line along which most bad weather occurs

The Army points out that Germany's December, 1944 offensive in Belgium was undoubtedly arranged to coincide with bad weather that would keep our superior air strength incapable of decisive blows while German ground forces, numerically stronger, smashed through. A clearing break in the weather came ultimately and helped to stop the German offensive.

ARMY AIR FORCE JOB

According to the Navy, it is questionable whether the Jap weather technique was ever as highly developed as ours. In at least one instance a Jap plan of action did not work out as apparently scheduled by the enemy's weather calculations. The Japanese attempted to bring reinforcements to New Guinea under a storm front, knowing that our patrol planes would be unable to spot their movement through the protecting weather. The troop and supply ships were spotted by Army patrol planes. They were then attacked and destroyed by U.S. Army air forces in the famous "Battle of the Bismarck Sea."

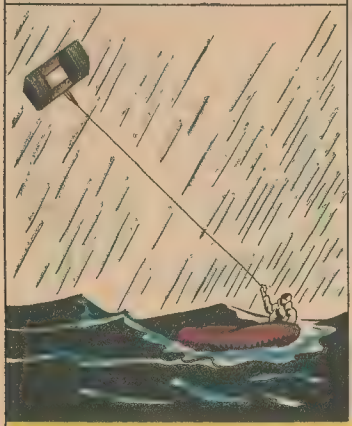
The Army Air Force, in 1942, wanted a thorough coding of the world's weather data going back as far as 1899. The project to cover this need and produce the information in the form of daily charts was operated under the Weather Bureau, in cooperation with the military services. All available information on weather in the northern hemisphere for each day since 1899 was replotted and reanalyzed according to the most modern practices. At first, a slow process required one full year of analysis to plot three years of weather. The data were therefore translated into a standard code and transferred to a punch card system. In this way, 30 years of weather were charted and analyzed within a year.

From the areas studied by the Army, high priority section — those places where military action would most likely occur—were coded and a similar card system evolved. Total weather tabulations to date are about 55,000,000 cards. Up to recently the AAF weather division coded and punched all Army Air Force weather observations from AAF fields all over the world. About 500,000 cards were recorded each month.

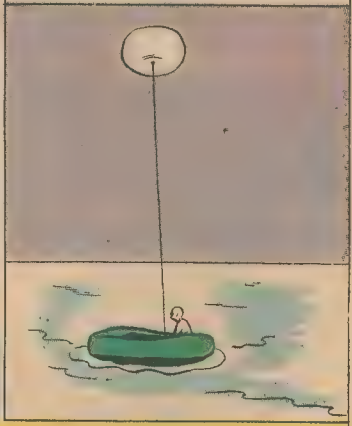
Stripped of technical language, weather forecasting is an attempt to judge what air masses will be over a certain region at a specified time plus a description of the characteristics of the air mass—its temperature, clouds, winds, air stability, etc. Weather "fronts" (the boundary between two air masses where the conflict responsible for bad weather occurs) must also be forecast and their speeds calculated mathematically.

"GIBSON GIRL", RADIO KIT...

IN FOUL WEATHER THE BOX-KITE FLIES THE 300 FT. ANTENNA.



IN CALM THE OXYGEN BALLOON TAKES THE ANTENNA ALOFT.



POSSIBLY THE GREATEST SINGLE CONTRIBUTION TO THE MODERN "ROBINSON CRUSOE" HAS BEEN THE "GIBSON GIRL". IN PEACE-TIME, TOO, THIS GREAT RADIO KIT WILL CONTINUE TO SAVE COUNTLESS HUMAN LIVES.

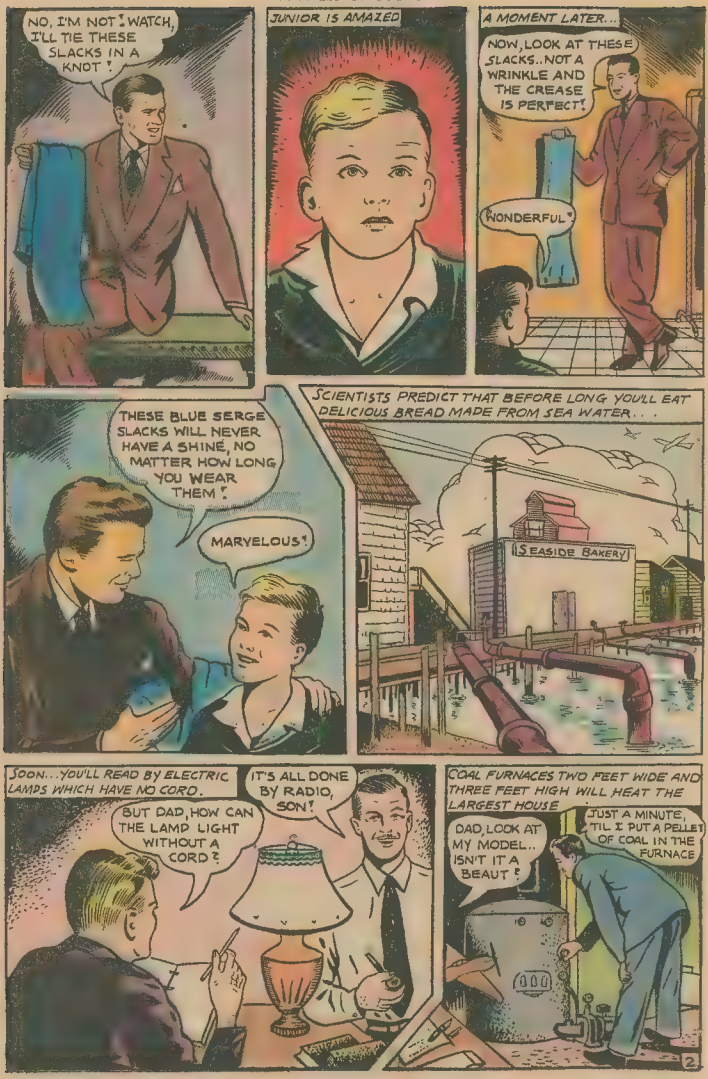
THE MOST IMPORTANT FEATURE OF THE "GIBSON GIRL" IS ITS SIMPLE, RUGGED, WATER-PROOF, HAND-POWERED, ONE WAY TRANSMITTER. POWER IS GENERATED BY THE HAND CRANK ON TOP. OPERATING ON THE INTERNATIONAL DISTRESS FREQUENCIES, THE RANGE HAS BEEN UP TO 750 MILES.

NOW, THE UNITED STATES NAVY

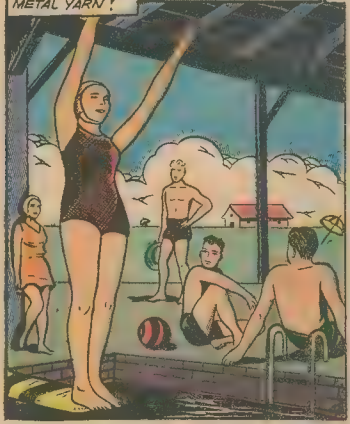
SOS

IS IMPROVING THE "GIBSON GIRL" TO RANGE UP TO 1600 MILES.

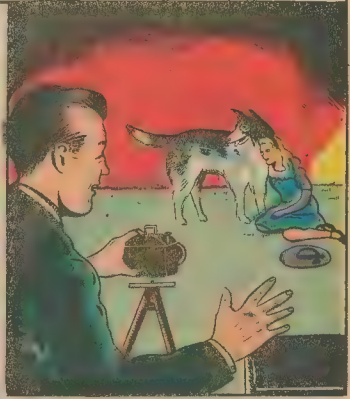
WONDER WORLD
of the
PRESENT & FUTURE
ALICE IN WONDERLAND HADNOTHING ON LUCKY YOU.. BECAUSE IN THE WONDER WORLD OF THE FUTURE, IN THE NEXT YEAR OR SO, SCIENCE AND CHEMISTRY WILL JOIN HANDS TO PRODUCE MODERN MIRACLES OF LIVING; CONSIDERED IMPOSSIBLE ONLY A SHORT TIME AGO!!
MOTHER AND SISTER WILL GO SHOPPING IN SHIMMERING FROCKS OF SPUN GLASS AND ALUMINUM!
AND WHEN JUNIOR BUYS A NEW SUIT.....
WOULD YOU LIKE A WRINKLE-PROOF SUIT?
ARE YOU KIDDING?


NO, I'M NOT! WATCH, I'LL TIE THESE SLACKS IN A KNOT!
JUNIOR IS AMAZED
A MOMENT LATER...
NOW, LOOK AT THESE SLACKS..NOT A WRINKLE AND THE CREASE IS PERFECT!
WONDERFUL!
THESE BLUE SERGE SLACKS WILL NEVER HAVE A SHINE, NO MATTER HOW LONG YOU WEAR THEM!
MARVELOUS!
SCIENTISTS PREDICT THAT BEFORE LONG YOU'LL EAT DELICIOUS BREAD MADE FROM SEA WATER...
SEASIDE BAKERY
SOON...YOU'LL READ BY ELECTRIC LAMPS WHICH HAVE NO CORD.
BUT DAD, HOW CAN THE LAMP LIGHT WITHOUT A CORD?
IT'S ALL DONE BY RADIO, SON!
COAL FURNACES TWO FEET WIDE AND THREE FEET HIGH WILL HEAT THE LARGEST HOUSE
DAD, LOOK AT MY MODEL.. ISN'T IT A BEAUT?
JUST A MINUTE, 'TIL I PUT A PELLET OF COAL IN THE FURNACE
2

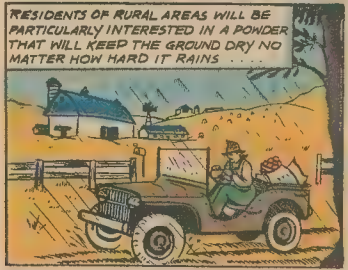
THE NEXT TIME YOU TAKE A DIP, YOU MAY WEAR A STUNNING RUST-PROOF BATHING SUIT MADE FROM A NEWLY-DISCOVERED METAL YARN!



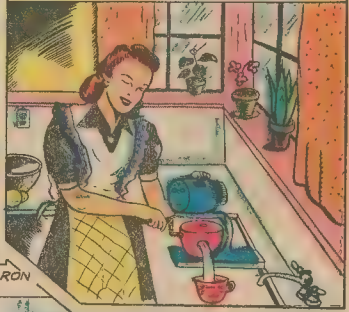
ONE OF THE MOST STARTLING INVENTIONS IS A CAMERA THAT TAKES PICTURES WITHOUT FILM!



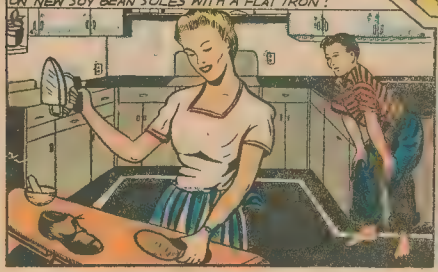
RESIDENTS OF RURAL AREAS WILL BE PARTICULARLY INTERESTED IN A POWDER THAT WILL KEEP THE GROUND DRY NO MATTER HOW HARD IT RAINS . . .



FROM A MIXTURE OF WATER, DRIED SKIMMED MILK AND BUTTER, A BRAND NEW MECHANICAL COW WILL PRODUCE RICH CREAM AND MILK

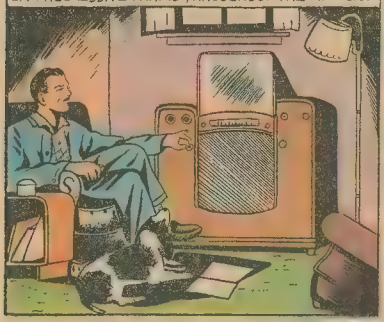


WHEN JUNIOR NEEDS NEW SOLES, MOTHER WILL IRON ON NEW SOY BEAN SOLES WITH A FLAT IRON!

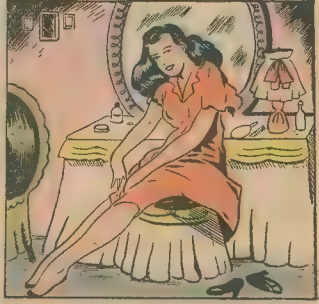


IF YOU GO SAILING-NO NEED TO WORRY ABOUT OVER-TURNING. A LIFE-PRESERVER QUILT WILL BRING YOU HOME SAFELY.

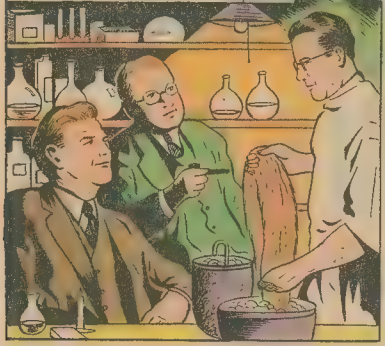
RADIO-DIRECTED ROBOT-PLOUGHS WILL BE OPERATING ON PROGRESSIVE FARMS THROUGHOUT THE NATION.



MOTHER AND SISTER WILL WEAR STOCKINGS THAT ARE CHEMICALLY TREATED. AND 100% RUN-PROOF!

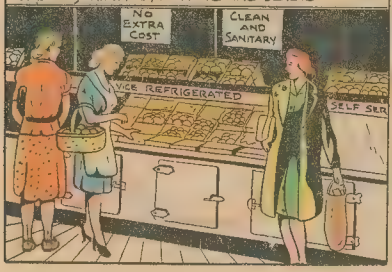


CHEMISTS HAVE DEVELOPPED A PLASTIC SOLUTION FOR TREATING SHEEP PELTS



AFTERWARDS, THE PELTS LOOK PRECISELY LIKE SEAL OR BEAVER...

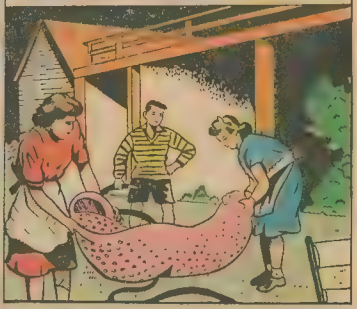
ALREADY, HOUSEWIVES IN COLUMBUS, OHIO ARE PURCHASING REFRIGERATED FARM-FRESH VEGETABLES AND FRUITS ...WASHED, TRIMMED, CLEANED AND SEALED



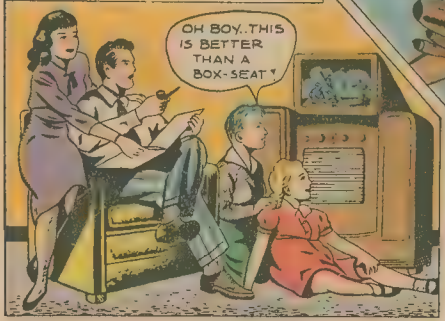
SOON, SIMILAR MARKETS WILL BE ESTABLISHED THROUGHOUT THE COUNTRY... ENABLING CUSTOMERS TO BUY LUSCIOUS CELLOPHANE-WRAPPED FRUIT LIKE THIS.

MIRACULOUSLY SOFT FOAM-RUBBER MATTRESSES, WHICH INDUCE RESTFUL SLEEP, SHORTLY WILL BE AVAILABLE IN ALL STORES.

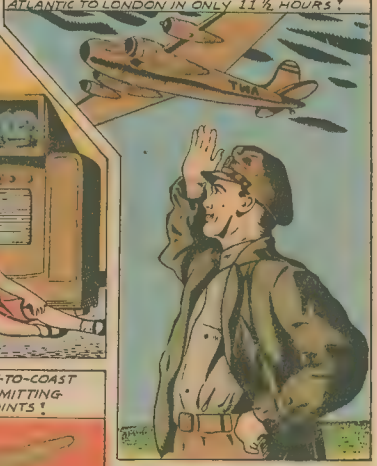
WEIGHING BUT 28 POUNDS, FOAM-RUBBER MATTRESSES CAN QUICKLY BE WASHED WITH A GARDEN HOSE AND RUNG DRY!



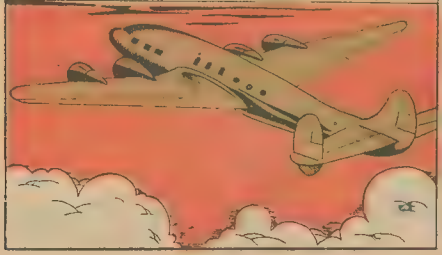
MANUFACTURERS PROMISE STARTLING NEW TELEVISION SETS THAT WILL SHOW PICTURES IN BOTH WHITE AND NATURAL COLOR.



WITHIN THE NEXT YEAR, YOU CAN SPAN THE U.S. IN STRATOLINERS IN 9 HOURS .OR HOP THE ATLANTIC TO LONDON IN ONLY 11½ HOURS!

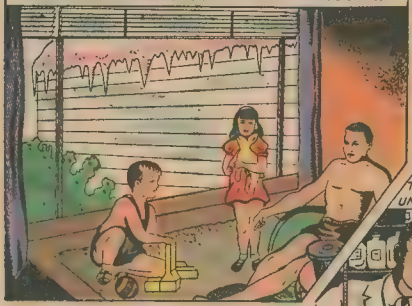


SCIENTISTS ASSERT THAT A SIMULTANEOUS COAST-TO-COAST BROADCAST IS POSSIBLE BY MEANS OF TRANSMITTING TELEVISION FROM PLANES AT STRATEGIC POINTS!

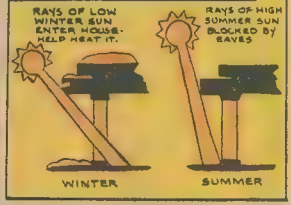


AND NOW, A NEW ELECTRONIC RAT-TRAP PROMISES SWIFT AND PAINLESS DEATH TO ALL RODENTS. . .

WITHOUT ARTIFICIAL HEAT, THE HOUSE OF THE FUTURE MAY USE DOUBLE-PANELLED WINDOWS WITH DEHYDRATED AIR SEALED BETWEEN TO GENERATE SUMMER TEMPERATURE WITH THE AID OF THE SUN.

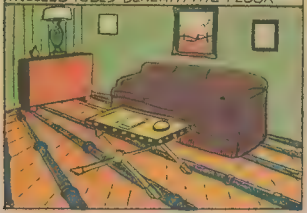


THIS IS HOW IT WILL BE DONE. ..

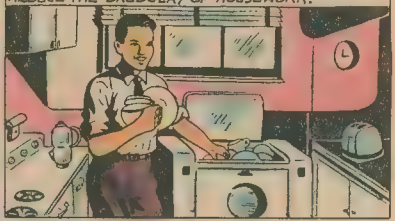


NEW WONDER DRUGS PROMISE TO SPELL THE DEATH KNELL FOR MANY HERETOFORE UNCONQUERED DISEASES.

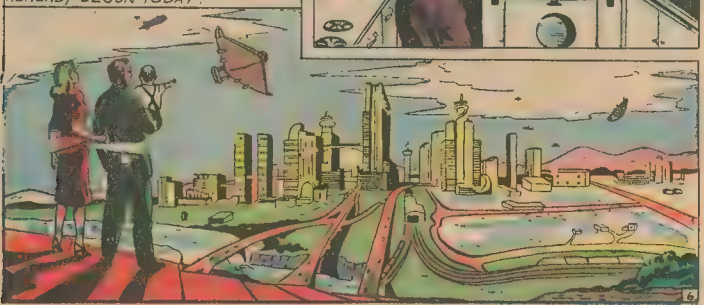
RADIATORS AND AIR VENTS CAN BE ELIMINATED IN ANOTHER NEW METHOD OF HEATING, WITH AUTOMATICALLY CONTROLLED TUBES BENEATH THE FLOOR



COMPLETELY ELECTRIFIED KITCHENS ARE ALREADY ON THE MARKET, INCLUDING A COMBINATION LAUNDRY AND DISH-WASHING MACHINE, WHICH WILL REDUCE THE DRUDGERY OF HOUSEWORK.



INNUMERABLE MARVELS ARE PROMISED IN THE FUTURE BY MEN OF SCIENCE AND CHEMISTRY, AND THE WORLD OF TOMORROW IS CERTAIN TO BECOME A WONDER WORLD OF AMAZING PROPORTIONS.... AN ERA THAT HAS ALREADY BEGUN TODAY!

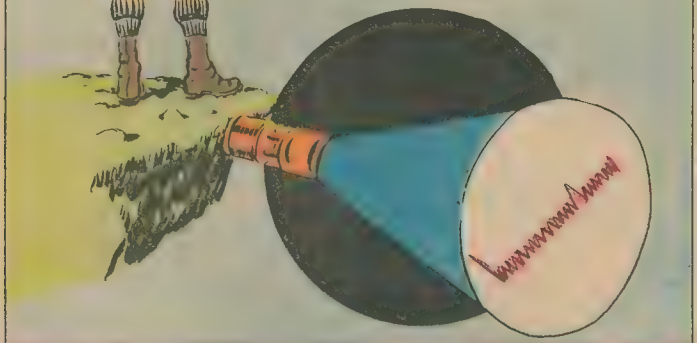


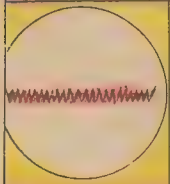
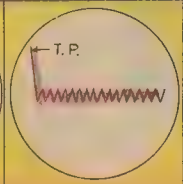
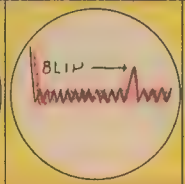
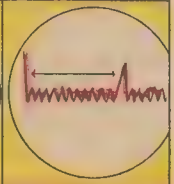
AMONG THE MARVELOUS ADVANCEMENTS OF SCIENCE SHOWN VISITORS RECENTLY IN NEW YORK HARBOR, AT THE GREATEST CONCENTRATION OF SEA POWER IN HISTORY OF THE UNITED STATES NAVY, WAS RADAR. THE WORD RADAR IS TAKEN FROM THE PHRASE "RADIO DETECTION AND RANGING".

WHEN A SWISS YODELER SENDS HIS VOICE AGAINST A MOUNTAINSIDE AND HEARS AN ECHO HE IS DOING VERY MUCH THE SAME THING RADAR ACCOMPLISHES.

IF HE COULD MEASURE THE TIME IT TAKES HIS ECHO TO RETURN, AND IF HE KNEW THE SPEED OF SOUND, HE COULD CALCULATE HIS DISTANCE FROM THE MOUNTAIN.

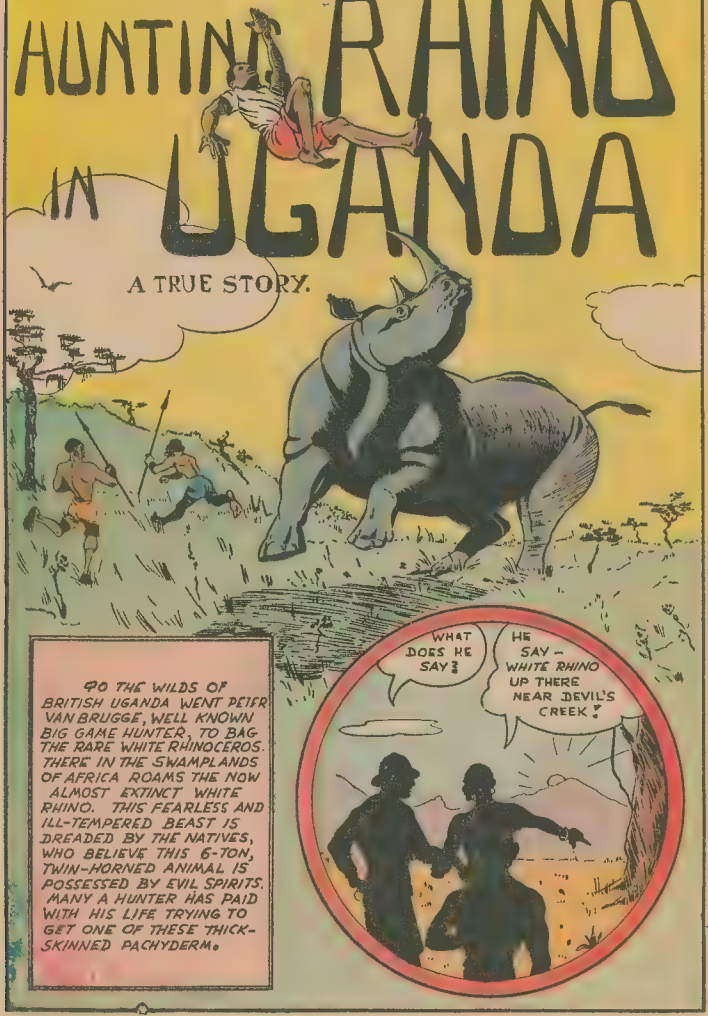
YOUR NAVY RADAR MAN CAN CALCULATE DISTANCE, RAPIDLY AND ACCURATELY, BY MEANS OF A BEAM OF ELECTRICAL ENERGY WHICH APPEARS ON A CATHODE RAY TUBE.



BEAM APPEARS AS CONTINUOUS LINE	RADAR CAUSES TRANSMITTED PULSE	ECHO RETURNING CAUSES BLIP	DISTANCE IS CALCULATED
			
OF LIGHT.			BETWEEN T.P. AND BLIP.

HUNTING RHINO IN UGANDA

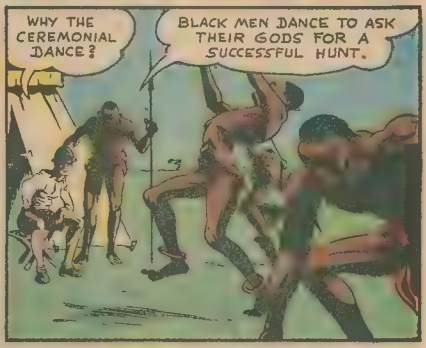
A TRUE STORY.

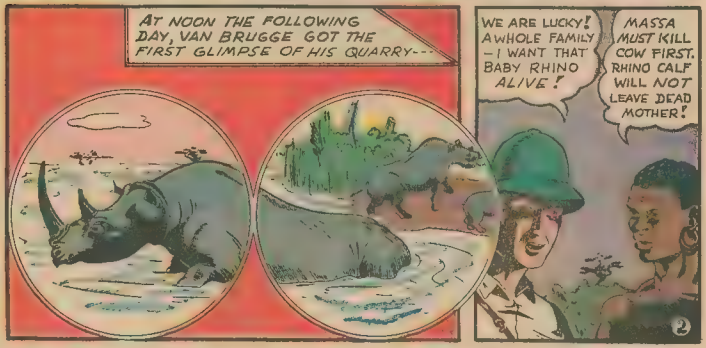


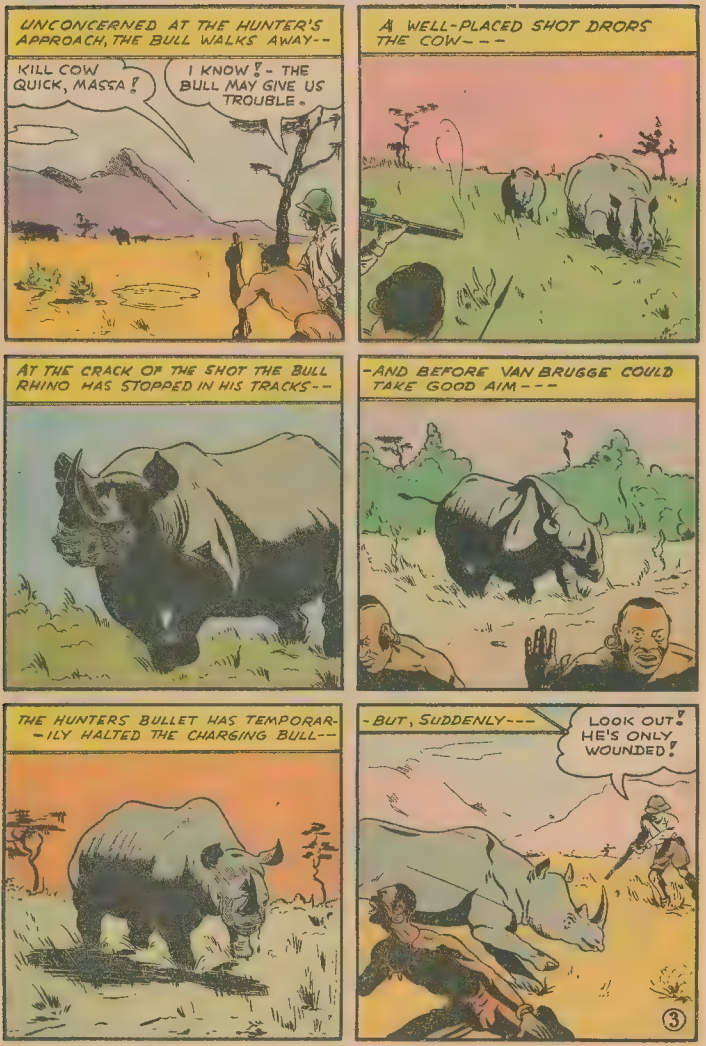
TO THE WILDS OF BRITISH UGANDA WENT PETER VAN BRUGGE, WELL KNOWN BIG GAME HUNTER, TO BAG THE RARE WHITE RHINOCEROS. THERE IN THE SWAMPLANDS OF AFRICA ROAMS THE NOW ALMOST EXTINCT WHITE RHINO. THIS FEARLESS AND ILL-TEMPERED BEAST IS DREADED BY THE NATIVES, WHO BELIEVE THIS 6-TON, TWIN-HORNED ANIMAL IS POSSESSED BY EVIL SPIRITS. MANY A HUNTER HAS PAID WITH HIS LIFE TRYING TO GET ONE OF THESE THICK-SKINNED PACHYDERM.

AT DAY-BREAK PETER VAN BRUGGE'S S'FARI SET OUT FOR DEVIL'S CREEK.

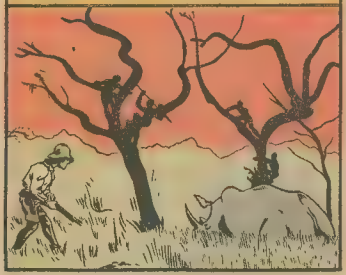
AFTER SEVERAL DAYS - - -
IT IS THERE HE SAW RHINO!
GOOD! WE'LL CAMP HERE.


WHY THE CEREMONIAL DANCE?
BLACK MEN DANCE TO ASK THEIR GODS FOR A SUCCESSFUL HUNT.


AT NOON THE FOLLOWING DAY, VAN BRUGGE GOT THE FIRST GLIMPSE OF HIS QUARRY---
WE ARE LUCKY! A WHOLE FAMILY - I WANT THAT BABY RHINO ALIVE!
MASSA MUST KILL COW FIRST. RHINO CALF WILL NOT LEAVE DEAD MOTHER!
2


UNCONCERNED AT THE HUNTER'S APPROACH, THE BULL WALKS AWAY--
KILL COW QUICK, MASSA!
I KNOW! - THE BULL MAY GIVE US TROUBLE.
A WELL-PLACED SHOT DROPS THE COW---
AT THE CRACK OF THE SHOT THE BULL RHINO HAS STOPPED IN HIS TRACKS--
-AND BEFORE VAN BRUGGE COULD TAKE GOOD AIM---
THE HUNTERS BULLET HAS TEMPORAR--ILY HALTED THE CHARGING BULL--
-BUT, SUDDENLY---
LOOK OUT! HE'S ONLY WOUNDED!
3

HAVING CHASED HIS ENEMIES UP THE TREES, THE RHINO SURVEYS THE FIELD - - -



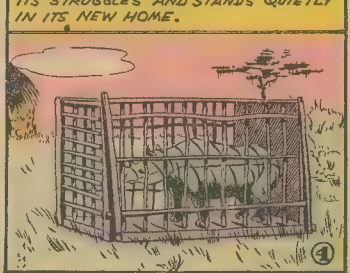
--AND WHILE VAN BRUGGE RELOADS HIS HIGHPOWERED RIFLE - - -

--THEN, JUST AS THE ENRAGED RHINO CHARGES HIS TORMENTORS, VAN BRUGGE'S BULLET BRINGS HIM DOWN--

CAPTURING THE BABY RHINO WAS NO EASY TASK - - -

-THE ROPE CIRCLE BECOMES SMALLER AND SMALLER, UNTIL - - -

-- FINALLY, AFTER HOURS OF FRANTIC, BUT VAIN ATTEMPTS TO FREE HIMSELF, THE ONE-TON WHITE RHINO CALF CEASES ITS STRUGGLES AND STANDS QUIETLY IN ITS NEW HOME.

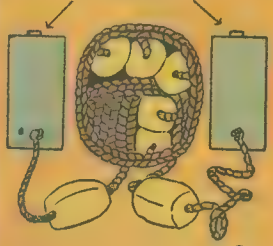


RIDING A BLISTER..

ONE WAY OF MAKING SURE THAT A MESSAGE IS RECEIVED IS TO LASSO THE RECEIVER. THE NAVY "COWBOY" RIDES A BLISTER INSTEAD OF A BRONCO, AND HIS ROPE IS A DROP. BECAUSE OF ITS SIMPLICITY, THE "COWBOY" DROP IS EASY TO HANDLE IN A PBY OR PBM.

THE MESSAGE IS PLACED IN A SLOT IN THE BALSA WOOD HOLDERS ON EACH END OF THE LINE. THE LINE IS BUOYED AT INTERVALS BY BALSA WOOD BLOCKS.

THE NAVY "COWBOY" UNCOILS HIS LASSO AS HE APPROACHES HIS TARGET ... RAFT, BOAT, BEACH, OR WHATEVER OBJECT .. AND LASSOS IT JUST AS A COWBOY WOULD.



LINE WITH BALSA-WOOD BUOYS

ANY FELLOW WHO HAS HANDLED BALSA WOOD WILL APPRECIATE THIS DROP.

EXPLORERS of the DEEP SEA

NOT UNTIL DR. WILLIAM BEEBE, WITH THE AID OF THE "NATIONAL GEOGRAPHIC" AND "NEW YORK ZOOLOGICAL" SOCIETIES, DESCENDED IN HIS NOW FAMOUS "BATHYSPHERE" INTO HITHERTO UNEXPLORED DEPTHS DID WE KNOW ANYTHING OF LIFE THOUSANDS OF FEET BELOW THE SURFACE OF THE SEA.

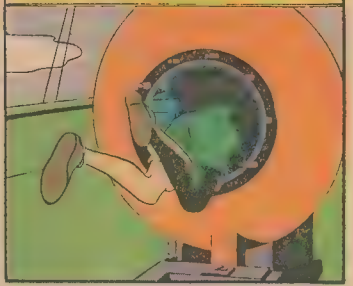
THE "BATHYSPHERE", CONSTRUCTED TO WITHSTAND TERRIFIC PRESSURE, REVEALED TO DR. WILLIAM BEEBE AND HIS CO-EXPLORER OTIS BARTON, THE MYSTERIES OF THE BRINY DEEP, AS THEY GAZED THROUGH THE THREE-INCH THICK FUSED QUARZ WINDOWS--

ALTHOUGH EVERY SAFETY MEASURE HAD BEEN TAKEN, THE EXPEDITION WAS NOT WITHOUT SERIOUS RISKS, — AS AN INCIDENT DURING A TEST DIVE CLEARLY DEMONSTRATED—

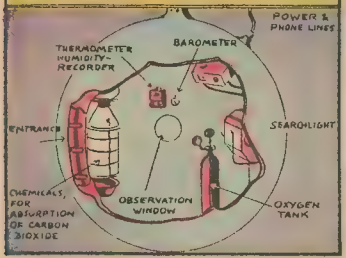
CAREFUL! THE SPHERE'S SPRUNG A LEAK AND IS FULL OF WATER!

ANOTHER TWIST, AND THE WING SCREW OF THE DOOR TORE FROM DR. BEEBE'S HANDS.—A STREAM OF WATER SHOT ACROSS THE DECK OF THE „READY!"— POWERFUL ENOUGH TO KILL A MAN!

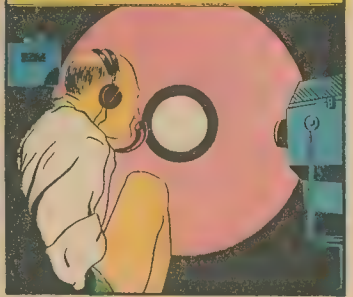
ON AUGUST 15, 1934, THE DARING DEEP-SEA EXPLORERS „ENTERED THE „ BATHYSPHERE" – – –



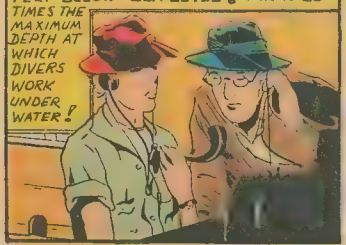
– – AND CROUCHED IN THE SPHERE, EQUIPPED WITH A POWERFUL SEARCH LIGHT, OXYGEN TANKS, AIR-CONDITIONING AND SCIENTIFIC GEAR, BEGAN THEIR RECORD BREAKING DIVE – – –



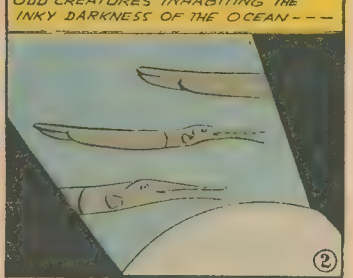
SPACE WITHIN THE 4½ FOOT „ BATHY-SPHERE " WAS AT A PREMIUM – – –



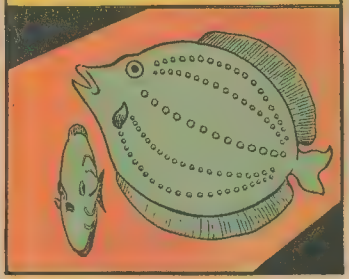
AFTER TESTING THEIR LINE OF COMMUNICATION WITH MISS GLORIA HALLISTER AND JOHN TEE-VAN, DR WM. BEEBE AND OTIS BARTON STARTED ON THEIR RECORD DIVE TO 3,028 FEET BELOW SEA LEVEL! THIS IS 10 TIMES THE MAXIMUM DEPTH AT WHICH DIVERS WORK UNDER WATER!



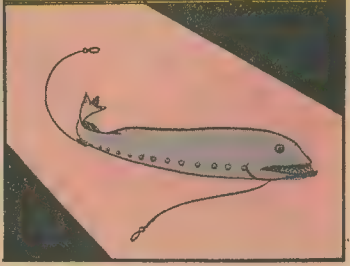
MR BARTON'S CAMERA TOGETHER WITH DR. BEEBE'S VIVID DESCRIPTION ENABLES US TO GET A GLIMPSE OF THE ODD CREATURES INHABITING THE INKY DARKNESS OF THE OCEAN – – –



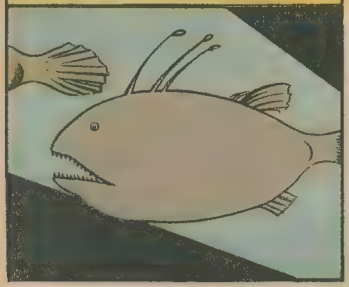
AT 1900 FEET THE SPHERE ENCOUNTERED DR. BEEBE'S NEWEST FIND, THE FIVE-LINED CONSTELLATION FISH---



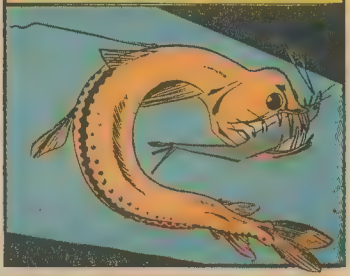
--AT 2,000 FEET DR. BEEBE WAS ABLE TO OBSERVE THE SIX-FOOT, UNTOUCHABLE BATHYSPHERE." FISH:-NONE HAD EVER BEEN CAUGHT IN THE SPHERE'S DRAGNETS.



--AT 2,470 FEET, THE „THREE-STARRED ANGLERFISH" PASSED THE OBSERVATION WINDOW OF THE SPHERE ---

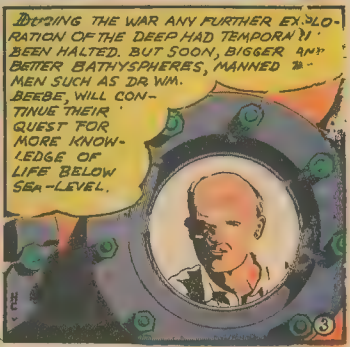


THE FASCINATED DEEP-SEA EXPLORERS WITNESSED MANY TRAGEDIES SUCH AS THESE: A SABER-TOOTHED „VIPERFISH" DEVOURING A „SCARLET SHRIMP---



--THE GREAT „GULPER EEL" MAKING A MEAL OF THE GIANT „LANTERNFISH"---

DURING THE WAR ANY FURTHER EXPLORATION OF THE DEEP HAD TEMPORARILY BEEN HALTED. BUT SOON, BIGGER AND BETTER BATHYSPHERES, MANNED BY MEN SUCH AS DR WM. BEEBE, WILL CONTINUE THEIR QUEST FOR MORE KNOWLEDGE OF LIFE BELOW SEA-LEVEL.

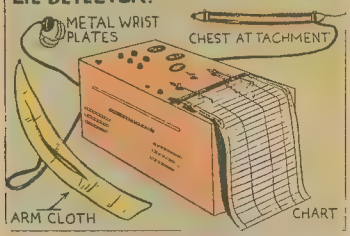


DEVICE SHOWING HEART REACTION TO EXCITEMENT.

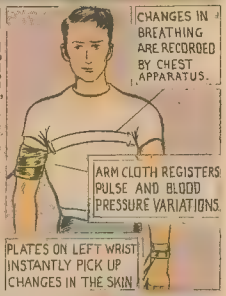
LIE DETECTOR'S WORK

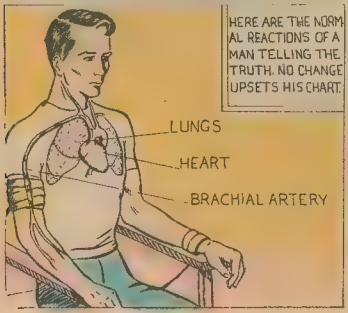
By Rufus Bill Peacock

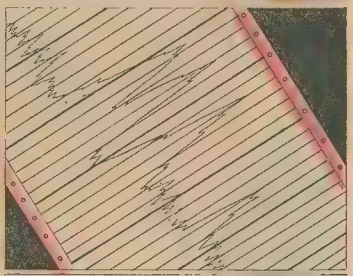
SHOWN BELOW IS A SKETCH OF THE KEELER POLYGRAPH, POPULARLY CALLED A **LIE DETECTOR.**



LEONARDE KEELER, AUGUST VOLLMER, DR WILLIAM MARSTON, JOHN A LARSON, HAVE ALL DONE OUTSTANDING LIE DETECTOR WORK. WITH A LIE DETECTOR, A SKILLED OPERATOR CAN DELVE INTO MAN'S DEEPEST SECRETS, AND HIS HIDDEN EMOTIONS

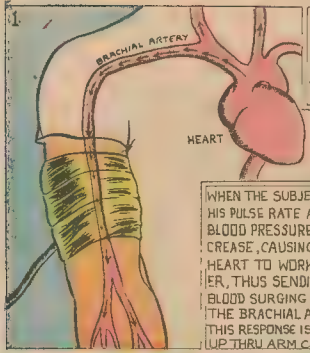

CHANGES IN BREATHING ARE RECORDED BY CHEST APPARATUS.
ARM CLOTH REGISTERS PULSE AND BLOOD PRESSURE VARIATIONS.
PLATES ON LEFT WRIST INSTANTLY PICK UP CHANGES IN THE SKIN.





A LIE IS RECORDED ON CHART BY TALL WAVY LINES SHOOTING HIGH ABOVE NORMAL 'TRUTH' LINES

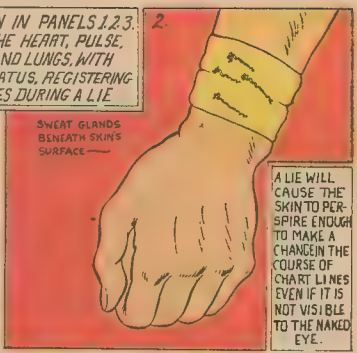
1.



SHOWN IN PANELS 1.2.3. ARE THE HEART, PULSE, SKIN, AND LUNGS, WITH APPARATUS, REGISTERING CHANGES DURING A LIE

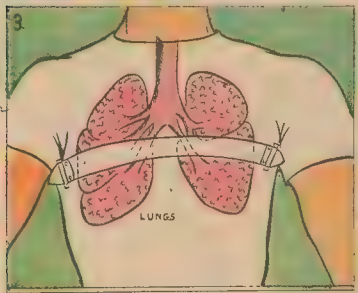
WHEN THE SUBJECT LIES, HIS PULSE RATE AND BLOOD PRESSURE INCREASE, CAUSING THE HEART TO WORK HARDER, THUS SENDING THE BLOOD SURGING THRU THE BRACHIAL ARTERY. THIS RESPONSE IS PICKED UP THRU ARM CLOTH.

2.

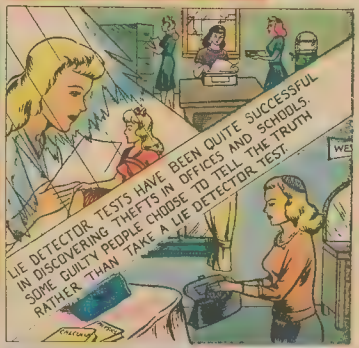


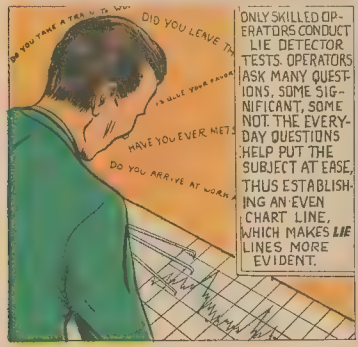
A LIE WILL CAUSE THE SKIN TO PERSPIRE ENOUGH TO MAKE A CHANGE IN THE COURSE OF CHART LINES EVEN IF IT IS NOT VISIBLE TO THE NAKED EYE.

3.



QUICKENED BREATHING IS AT ONCE RECORDED BY THE ATTACHMENT ABOUT THE CHEST, AS LUNGS INCREASE ACTIVITY.

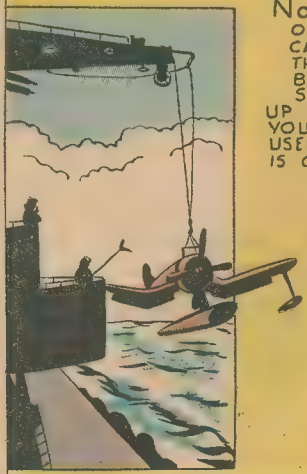

LIE DETECTOR TESTS HAVE BEEN QUITE SUCCESSFUL IN DISCOVERING THEFTS IN OFFICES AND SCHOOLS. SOME GUILTY PEOPLE CHOOSE TO TELL THE TRUTH RATHER THAN TAKE A LIE DETECTOR TEST.



ONLY SKILLED OPERATORS CONDUCT LIE DETECTOR TESTS. OPERATORS ASK MANY QUESTIONS, SOME SIGNIFICANT, SOME NOT. THE EVERYDAY QUESTIONS HELP PUT THE SUBJECT AT EASE, THUS ESTABLISHING AN EVEN CHART LINE, WHICH MAKES *LIE* LINES MORE EVIDENT.

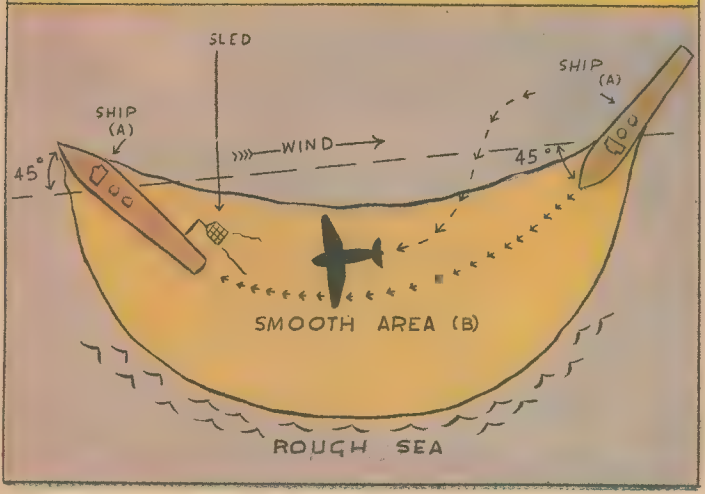
THE IMPORTANT WORK OF THE LIE DETECTOR HAS AIDED MANY INNOCENT PEOPLE CONVICTED OF CRIMES, WHILE IT HAS HELPED TO BRING JUSTICE TO THE GUILTY—

"CHARLIE" OF THE NAVY



NOT ALL PLANES SWOOP HOME ONTO THE FLIGHT-DECK OF A CARRIER. WHAT OF THE PLANES THAT MUST LAND ON THE SEA AND BE RECOVERED BY A SHIP? SUPPOSE YOU HAD TO PICK ONE UP IN A ROUGH SEA ··· WHAT WOULD YOU DO? ONE OF THE METHODS USED BY THE UNITED STATES NAVY IS CALLED BY THE ODD NAME-"CHARLIE".

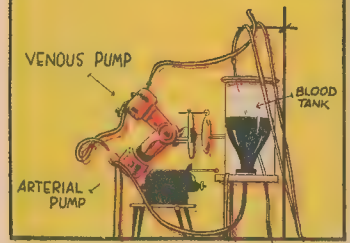
IN THIS MANEUVER, THE SHIP (A) MAKES A 90 DEGREE TURN THAT BEGINS 45 DEGREES INSIDE THE WIND LINE, AND FINISHES 45 DEGREES OUTSIDE. THIS SHARP TURN HAS THE EFFECT OF SKIDDING THE STERN AROUND. THE SURFACE WAVES ARE KNOCKED DOWN BY THE SHIP AND A SMOOTH AREA (B) IS CREATED BEHIND HER. THE PILOTS ARE TRAINED TO TIME THE MANEUVER SO THAT THE LANDING WILL BE MADE ACROSS THE WIDEST DIAMETER OF THIS SMOOTH AREA.



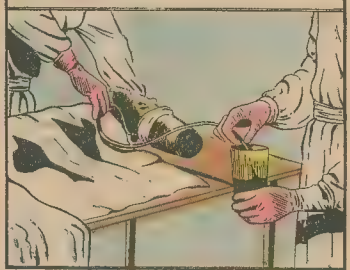
DOG DEAD OR ALIVE?

A SERIES OF DARING EXPERIMENTS BY A GROUP OF SOVIET SCIENTISTS UNDER DR. SERGE BRYUKHONENKO, POINTED THE WAY TO BLOOD-BANKING, TRANSFUSION AND PLASMA SEPARATION, WICH HAS SAVED INNUMERABLE LIVES DURING THE WAR.~

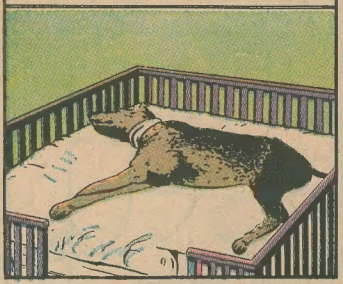
THE RUSSIAN BIOLOGISTS DEVISED A MECHANICAL HEART AND LUNGS, CALLED THE „AUTOJECTOR' ~~~



WITH THIS COMPARATIVELY SIMPLE APPARATUS THE BLOOD OF AN ANESTHETIZED DOG WAS COMPLETELY DRAINED FROM HIS BODY ~~~

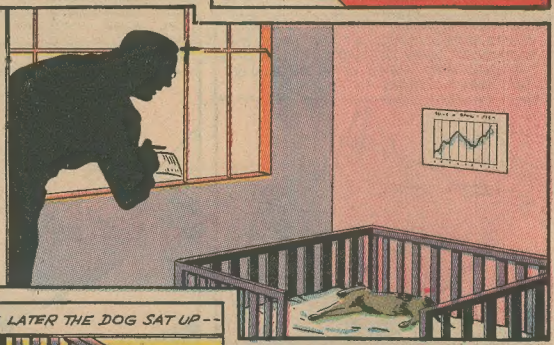


AFTER THE DOG HAD DIED A PAINLESS DEATH, HIS BLOODLESS CADAVER WAS LEFT UNDISTURBED FOR 15 MINUTES--

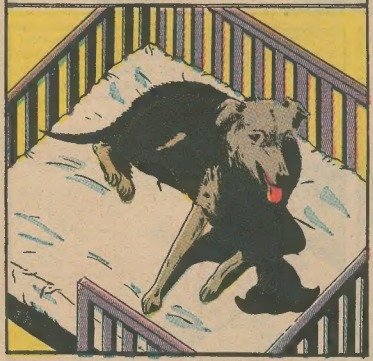


--AND THEN, WITH THE „AUTOJECTOR" ACTING AS THE DOG'S HEART AND LUNGS, THE BLOOD WAS PUMPED BACK AGAIN, UNTIL HIS ORGANS REVIVED ---

LIVING AGAIN THE DOG LAID IN A COMA WHILE HEART AND LUNGS RECOVERED--

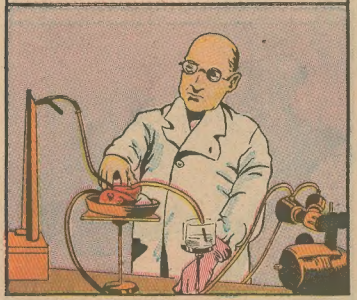


TWELVE HOURS LATER THE DOG SAT UP--

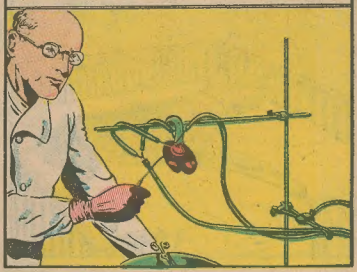


--AND, BACK ON HIS FEET AGAIN, RAN BARKING TO A FRIEND HE RECOGNIZED!

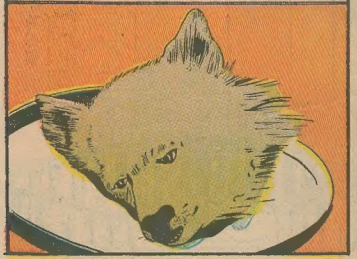
THE „AUTOJECTOR" KEPT A DOG'S LUNGS FUNCTIONING PERFECTLY--



--IT KEPT A DOG'S HEART BEATING RHYTMICALLY BY SUPPLYING OXYGENATED BLOOD TO THE CARDIAC VESSELS ---

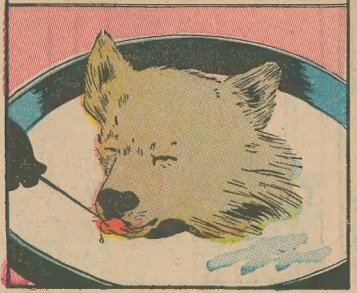


ONE OF THE MOST AMAZING EXPERIMENTS CONDUCTED AT THE MOSCOW INSTITUTE WITH THE AUTOJECTOR KEPT THE SEVERED HEAD OF A DOG ALIVE FOR MANY HOURS ---

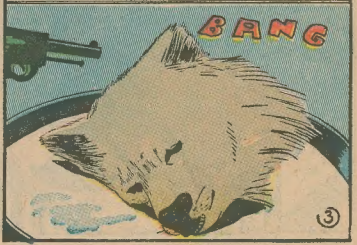


THE DOG'S HEAD REACTED NORMALLY TO OUTSIDE STIMULI - ITS EYES BLINKED UNDER A POWERFUL LIGHT,-

--THE SALIVARY GLANDS RESPONDED TO CITRIC ACID SMEARED ON THE DOG'S CHOPS ---



--AND ITS EARS COCKED FORWARD AT A LOUD NOISE, THUS CONFIRMING THE FACT THAT LIFE'S ORGANISM IS COMPOUNDED OF INTERDEPENDENT FUNCTIONS LOCALIZED IN SEPARATE TISSUES, CELLS AND ORGANS.



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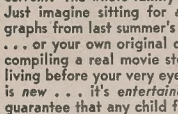

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